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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY, AND HOME INTERESTS.

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BEES BEGIN work earlier in hives facing east, but they work later in hives facing west.

WHEN A QUEEN is introduced, if the bees are in such a state of surprise as to ask, "Where am I?" the queen is always accepted; but never when the bees are in condition to ask the queen, "Who are you?"—*Bienen-Vater*. Wonder if there isn't a good deal in that. [I guess that is so.—ED.]

SOME YEARS AGO there was a warm discussion in this country as to whether healthy bees voided their feces in a solid or liquid condition. Now the discussion is on in Europe. Editor Gerstung takes the position that both may be correct, the age of bees and other conditions making the difference.

YOU ASK, Mr. Editor, p. 907, that I swap you two of those ragged covers for two new ones, so you may search for evidence of women having nailed them. I'd like to do that, but I don't like to break the set, and would rather have the whole fifty alike. But you can find out whether women nailed them by inquiring at Medina, where they were nailed.

W. E. CURTISS, the noted correspondent of the *Chicago Record*, has been looking up the book business. "That the Bible is the most popular selling book" is the verdict he gets from the bookstores and the big department stores. One of the latter said, "No, we do not sell them in large lots. We sell only one copy at a time, as a rule. Our average the year round will run from 125 to 150 a day. Neither David Harum nor Trilby nor any other story has touched the Bible as a seller."

STENOG springs a new idea, p. 909. At present it is only the second crop of red clover that is a seed crop, because there are not bumble-bees enough to fertilize the first crop. When hive bees get their tongues stretched, the first crop will be a seed crop. That may or may not be a desirable thing for farmers, but here's another thought that has possibilities in it, for bee-keeping at least: The first crop be-

ing left entirely to the hive bees, only blossoms with short enough tubes will be fertilized, and sowings from the first crop will soon make short tubes permanent. Whoop up the long tongues, Ernest!

"I DO NOT UNDERSTAND how fasting for only 30 minutes on the part of the queen should induce a friendly behavior on the part of the bees," quoth ye editor, p. 913. A hungry queen behaves differently, and will that not affect the behavior of the bees? Whether you understand it or not, I think you'd believe in it if you'd try it for two or three years as I have done. [I believe in fasting on the part of human beings, but I should not suppose it would make very much difference with a queen-bee. You may be right, however.—ED.]

PULVERIZED SUGAR is better for Good candy than granulated, but it costs nearly twice as much at the groceries, although the wholesale price is nearly the same. *How much better is pulverized than granulated for Good candy?* [Yes, pulverized sugar is far better than granulated, for making Good candy. The last named is like so much sand held together by honey, while the former welds together in a homogeneous dough. Granulated-sugar candy is apt to waste, in that the granules rattle down, either out of the cages or between the brood-combs. The bees will then tote these particles out of the entrance as so much useless rubbish.—ED.]

IN A REPORT of the exhibit at the Paris show, the *Revue Internationale* says: "The Danzy hive passes for the most suitable of all hives for the production of comb honey." If the worthy editor of the *Revue* were to visit this country he might be surprised to find that it is by no means the great mass of comb-honey producers that thus esteem the Danzy. [The same thing might have been said during the first two or three years of its introduction, of the Langstroth hive, the extractor, and, in fact, of any valuable and recognized invention which is to-day used almost universally. The Danzenbaker hive must not be judged by the number now in use, but by the progress it has made since the date of its introduction. Next to the Dovetailed hive, it has made as rapid strides as any hive we have ever put out.—ED.]

A FIXED STRAIN of bees is very desirable for the sake of continuing good qualities without change. But the "fixed strain" idea may be worked too hard when it comes to the matter of improvement. With a strain so fixed that there is no possibility of variation, there is no possibility of improvement. Continuation of good traits comes from fixedness. Improvement of traits comes, not from fixedness, but from variation. The trouble with a cross is that its characteristics are not fixed, but that does not argue against the possibility of greater improvement in the cross, and then it is the province of careful breeding to make that improvement fixed. I am an advocate of pure stock; but if I had the purest and best Italians on earth, and a cross that would beat them in storing by 50 per cent, I'd drop the purity and try to fix that 50 per cent. [Yes, but I believe you will find that crosses would have a very strong tendency to sport back to the original stock, either one of which would be poorer than the mixture.—ED.]

THE American Bee-keeper, speaking of the pasteboard-candy mode of introduction, says: "At this writing numerous reports are coming in which show that failure more often results through the use of the new plan than with the older method." Isn't your verdict a bit hasty, Bro. Hill? In the few hundred cases that have come within my knowledge there have been rare exceptions when the bees did not remove the pasteboard, but that is the only objection. As to the rest, there is undoubtedly additional security from the longer time it takes to remove the pasteboard; and, without being sure of it, my present notion is that fewer failures will occur with the pasteboard. [A good deal depends on the kind of pasteboard and the manner it is put in over the candy. The first cages we sent out had the strips cut too wide. We now cut them much narrower, so that the candy is exposed on both sides to the bees as well as through the perforations in the center. It is true, there have been failures by this plan of introduction; but the failures have been due, I think, in all cases, to too much pasteboard or to the wrong kind of pasteboard—ED.]

YOU ASK, Mr. Editor, p. 869, if I am sure the inverting of the syrup will be as thoroughly done by the bees when water is poured on the sugar in the feeder as when the two are thoroughly mixed beforehand in the extractor. No, I'm not sure, but I think so. Please disabuse your mind of the idea that the mixing cuts any figure in the case. When a bee takes a particle of sugar and a particle of water, those two particles are as thoroughly mixed as if you had reeled them an hour in the extractor. The only question is as to the thinness of the syrup. The thinner, the better chance for inversion. I think more water is used when the water is merely poured on the sugar; in other words, my plan gives a thinner syrup, and, hence, better inversion. But it should be said that, unless the feeding be done early enough, my plan is not so good as yours just because my syrup takes more time to evaporate. And if very late, a thicker syrup than

yours must be used. [You may be right, but it strikes me the bees can handle a syrup of the same general consistency better than they handle a mixture all the way from almost clear water, away up to a thick syrup. The last named will not be inverted as well as the medium thin syrup. Take it all in all, I suspect you will get good results by your plan, and the method to be used is more a matter of convenience, perhaps, than of any thing else.—ED.]



Into eternity goes the old year;
The century, too, hath its close;
The millennium dawn now hastens fast on,
Ending humanity's woes.

AMERICAN BEE JOURNAL.

IN GLEANINGS for Nov. 15 the senior editor had a write-up of Mr. York's journal from the very first. I was wondering what Mr. Y. would say after he regained his breath. Well, he said this:

We hardly know what to say in response to the exceedingly kind words Mr. Root has written, for it is not possible to deserve them. At any rate, we take off our hat and make our best bow with a sincere "thank you" for all he has said.

In speaking of the *Canadian Bee Journal* Mr. York says:

The literary shortcomings of contemporaries are not considered the best things with which to fill up the columns of a bee-journal; but it may not be greatly out of order to say that since W. J. Craig has taken the editorial chair of the *Canadian Bee Journal* there has been a very gratifying improvement in the proof-reading of that journal.

Amen! But the improvement is great all over.

The subject of getting bright yellow wax out of old combs is now receiving considerable notice. Mr. York thinks attention is being diverted from brightness to mere color, and thinks Mr. Dadant would pay but little attention to the yellowness, but would insist on brightness. He says, "As a matter of fact, slow cooling is a *sine qua non* in ninety-nine cases out of a hundred, and perhaps necessary in the hundredth case. . . . Some wax from old combs needs the addition of acid to bring out the bright color, but that does not take away the necessity of slow cooling, and there is practically no bright yellow wax without slow cooling." But why does slowness of cooling have any thing to do with the brightness of appearance? Simply because a long time in cooling allows the dirt and sediment to settle to the bottom of the mass, leaving the pure wax by itself.

Mr. Dadant gives an interesting account of his visit at the home of Mr. Ed. Bertrand, who

is probably at the present time the best-known bee-keeper in Europe. He, more than any other one man there, has been the means of introducing movable-frame hives among the French, standing alone, practically, at first. Soon after Mr. C. Dadant came to America in 1863, he saw the immense advantage of movable frames, and tried in vain to advocate their use through *L'Apiculteur*, edited by Mr. Hamet, a very fine gentleman, but one whose back was always resolutely set against any change in the old order of things. By working with Mr. Bertrand on that side of the Atlantic, Mr. Dadant has done so much to improve bee-keeping in France and Switzerland that their name is a household word there—so much so that Camille P. says they literally hugged him when he went into their homes while on his recent visit. Mr. Bertrand's works are numerous and popular. We have them all here, some being printed in Russian and some in Flemish, as well as the original French. Those who have GLEANINGS for 1891 will find on page 697 for that year a picture of Mr. Bertrand, with a full account of his life, written by Thos. W. Cowan. Perhaps Mr. York will lend us that view of Mr. Bertrand's fine residence at Nyon, Switzerland. Such men should be kept in remembrance. From private correspondence I have had with Mr. Bertrand I feel that a visit at his home would repay the trouble of a visit to the land of mountains and of William Tell.

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In my mind, one of the most interesting papers on honey and sugar in general is one from Thos. W. Cowan, now of California, editor of the *British Bee Journal*. It treats on the chemical properties of glucose, honey, sugar syrup, corn syrup, starch, cellulose, dextrose, wine, and other substances, and shows how adulteration of honey can be detected by means of the polariscope. It is impossible to make any condensation of this great paper, and it will not be necessary, as a copy of it can be had by any body desiring it. But it is not light reading. Every paragraph demands study, as does any scientific matter worth reading. Mr. Cowan shows that many substances are chemically like others, and yet are widely different. Sawdust is the same as corn flour; leather is the same as beefsteak; tea is chemically of no more value than plum and willow leaves. Mr. Cowan well says: "We prize honey, not because it consists, as the chemists would say, of sugar and water, but because it possesses delicate aroma and flavor which are always absent from, and can not by any known means at present be imparted to, any artificially made syrup." That ought to be pasted on every honey-label sold in the United States and in the lands surrounding. At the close I see the editor of this journal is reported as saying he fears the article is too technical for the most of us; but I really believe it would benefit us all to become more familiar with such matters, and to be able to think over the thoughts of some other men after they have put them on paper. The essay was read at the Chicago convention.



A NEW OLD METHOD OF INTRODUCING.

Using an Escort from the Hive to which a Queen is Introduced.

BY C. P. BONNEY.

[The following letter, addressed to Dr. Miller, was by the latter sent to us with the recommendation that we publish it. As it contains much of value I am glad to do so.—ED.]

Dr. C. C. Miller :—On receiving GLEANINGS to-day I noticed a Straw, page 680, where you placed bees from a strange colony with a queen, and she was kindly received. You ask, "Why can not this be made the basis of a safe introduction?" I have been using such a plan, and it is the most satisfactory of any I have ever used. I once introduced queens by caging a part of the colony. To this part caged I gave the queen, and then ran them in at the entrance. This plan worked well, but was considerable trouble, and I thought I could carry the same principle to the caging plan. I found by experimenting that I could use quite a less number of bees than half the colony, with perfect safety, and I now use only a few dozen bees and the caging plan.

I now use a large Miller introducing-cage, $\frac{1}{4}$ inch thick, and with a bee-chamber four inches square. I go to the colony to be de-queened, find the old mother, and remove her. By the aid of a brush I scoop several dozen bees into the before-mentioned cage. When enough have entered the cage, or when it is comfortably full without being crowded, I put in the stopper and set the cage away for half an hour, then take the queen from the shipping-cage, and place her in the introducing-cage, and she will be kindly received. After the bees have had time to become well acquainted with the queen, say two hours, place the cage in the hive, and the queen is safe. Please try this method, and report in GLEANINGS.

Woodburn, Oregon.

[At the time of sending this letter Dr. Miller gave his indorsement after this fashion:]

Dear Ernest :—This looks to me like a good thing. After the workers have been caged half an hour they will be in no humor to molest the queen; and with so large a force of bees that already have belonged to the colony, when the candy is eaten through, especially if pasteboarded, the queen ought to be safe.

C. C. MILLER.

[Along with this letter of Mr. Bonney came one from Mr. Pridgen, to whom it had also been referred by Dr. Miller, evidently. Mr. Pridgen, one of the very best authorities in this country on queen-rearing, writes:]

From my experience in introducing queens by using bees from the colonies to which they are introduced, I consider the plan outlined

by Mr. Bonney far superior to the usual instructions that accompany shipping-cages. In fact, I have not attempted to introduce one in years with the cage in which she is received, without first releasing the escort and caging some of the bees of the colony with her, which invariably treat the queen kindly if very young, or have filled themselves with honey. It works equally well if the queen be caged in an odorless cage without any bees, but still better to use the bees and odorless cage, or the odorless cage without the bees first scented by allowing the queen to be suspended to remain in it an hour, in the hive; but I prefer scenting the cage with the old queen, and then using the bees with the queen to be introduced, either by placing her in it and selecting the bees one at a time, or allowing them to go in, which they quickly do in search of their mother, and close them up for awhile, and then allow the queen to run in.

One advantage worth considering in having bees with the queen is that she is less liable to be damaged by the outside bees by getting hold of a leg or wing. I am partial to side-comb cages, as the queen is placed right down in the cluster; but instead of relying on hatching brood, young bees are at once put into the cage with the queen, through a hole near one corner, as large as a lead-pencil. The hole is stopped a day or two with a cork, and with candy when the cork is removed, thus allowing the bees to release the queen, and combining the good points in the different methods. A great deal of this is too complicated for a novice, and no doubt for that class the usual instructions are best; but before being too confident of uniform success by pasteboarding it should be remembered that, when queens are sent by mail, bees, cage, and all partake of the scent of the mails, and from this source much of the trouble arises, and there will not be the success that attends the same plan if the queen be changed to a fresh cage, thus removing much of the odor.

Bees will often destroy their own queen if given back after having been caged an hour or two with some of her own bees in a cage that has an odor that is transmitted to the queen.

Inasmuch as Dr. Miller was impressed with the fact that bees caged with a queen from a different colony were kind to her, I wish to say that, when robbers are bad, I often prepare a number of cages with escorts, by selecting the returning young bees that are taking their playspells, and find that it works well, as they always treat the queens kindly, are exactly the right age, and I have only to keep the nuclei open long enough to find the queens.

Creek, N. C.

[When Dr. Miller first spoke of this plan in his Straw, p. 680, I did not take much stock in it; but I am free to confess that there must be something in it after all. Caging the bees, and keeping them so until they have a real sense of their confinement, or loneliness, no doubt puts them in a condition where they

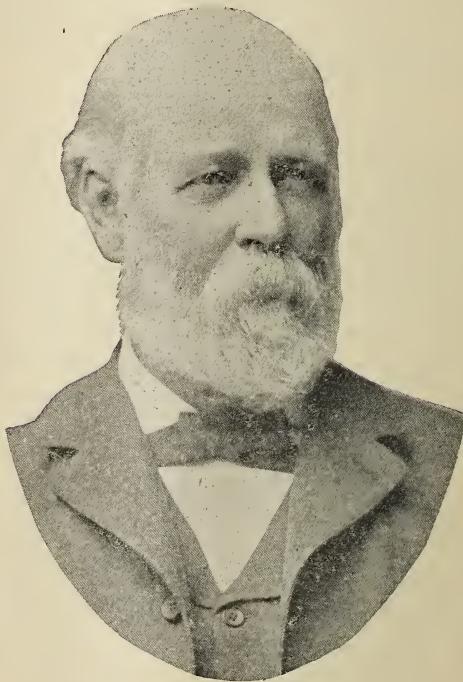
are ready to take up with *any* queen. When they are given back to the whole colony having the same scent, the new queen with them, all goes on lovely. But, as Mr. Pridgen points out, it is doubtful if the beginner would be able to recage or change the escort. But the advanced bee-keeper may well give it a trial. I should be pleased to hear from others.—ED.]

DIVIDING VS. SWARMING.

Boiling Foul-broody Honey.

BY W. W. WHIPPLE.

Last April I met with quite an accident that kept me from work some weeks, and my apiary had to be neglected; and when I was able to work it kept me busy from early morn till late at night. Thinking I could make it a little easier during the swarming season if I divided for increase instead of letting them swarm naturally, I divided part of my strongest swarms, as recommended by Doolittle, and flattered myself that I should have a good time so far as that was concerned, and I did; and now I am fully convinced that dividing for increase is a great thing to do, for every



W. W. WHIPPLE.

division swarmed, and some of them twice—in fact, nearly all my swarms came from my divided colonies. However, I got a very good crop of honey, and the bees seem to be in good condition for winter.

There seems to be a great diversity of opinions in regard to the time foul-broody honey

should be boiled in order to make it safe to feed. Some say five minutes, others ten, and it runs from that to six or eight hours, in order to kill the spores. For the last six or eight years I have fed considerable foul-broody honey, and have never had any trouble when it was brought to a good bubbling boil. If it took two to four hours boiling to kill the spore, it seems to me it would be more humane to hunt old Spore up and cut his throat, and not scald him for two hours. Such cruelty would hardly do in Colorado, for our ever watchful secretary of the Humane Society would be after one with a warrant. As to hives and queen-excluders (and I have used them both), I agree with McEvoy that where there is no honey adhering to them—in fact, are clean, having nothing on them that can be fed to the brood—they are perfectly safe to use; however, I have no objection to boiling the honey a week if one so desires.

Harris, Colo.

[I am glad to introduce to the readers of GLEANINGS Mr. W. W. Whipple, of Harris, Col. He did much to enliven the proceedings of the Colorado State convention a year ago, which I attended. He never arose to his feet but his eyes fairly twinkled with fun. It is said that a man's countenance betrays his inner nature. If he is full of sunshine he shows it. In the picture above, Mr. Whipple shows his practical good nature; and in the article he illustrates the very qualities I have mentioned. At the first reading of it I did not recognize my friend Mr. Whipple, and I could not think what he was driving at; but finally it dawned on me that he was putting up a practical joke on the advocates of dividing. In his second paragraph it appears he is getting off a "drive" on the writer; for I have been somewhat prominent in the advocacy of long boiling. I should be quite in favor of catching the spores and cutting their throats, if Mr. Whipple will perform the act.

But, joking aside, from what I could see and hear in Colorado I am satisfied that much that was called foul brood was not that disease, but something else. What it was I did not then know; but I have since had reason to suspect that it was pickled brood—a disease that readily yields to mild treatment. I should be inclined to believe that friend Whipple has, in some cases at least, mistaken pickled brood for foul brood, and hence he might draw erroneous conclusions. The two diseases are very much alike in appearance, and it takes close discrimination to distinguish the one from the more virulent form of disease.—ED.]

RED CLOVER AND RED-CLOVER BEES.

Difference in the Strain.

BY J. N. ARNOLD.

In GLEANINGS for Oct. 15 I see an interesting article from S. P. Culley on "Improvement of Red Clover and Bees;" also your editorial on page 813, which I was interested in

reading. In the past eighteen years I have had some experience with red clover and bees. For eight years I had one apiary, and for three years two in a locality that was a level country with a deep black soil. When the season was wet, grasses grew very large and heavy, especially red clover. The tubes were so deep that none but the Italians were ever seen working on them, and they never stored any surplus honey that I noticed. For nine years I have had my home apiary in a locality that is clay soil. Years ago it was a body of white-oak timber, now farm land, and kept up by small grain and red clover. During these years the most of my surplus honey has come from red clover. On this clay soil the tubes do not grow so deep as on damp black soil. I have observed, also, that when the season was dry the bees would gather more red-clover honey than in a wet season for a while, and give it a rank growth.

In regard to your editorial, I have noticed the past few years some colonies excelling others very much in storing red-clover honey while all were good Italians, and cared for in the same way, queens all the same age; some few colonies would give almost double the surplus other colonies would side by side. I have one colony that stored double the amount of any other in the apiary this season, from red clover.

Kalona, Iowa, Oct. 23.



CANDIED HONEY FURTHER DISCUSSED.

Glass all Right for Fancy Trade; Cheap Packages for the Masses; the Truth About Displaying Goods.

BY R. C. AIKIN.

Our previous musings discussed cheap honey and the cause thereof—why we have to sell cheap. I acknowledge there is a limited demand for honey in fancy packages and at fancy prices, but contend that we should not be compelled to depend on selling altogether as a luxury. There is no better sweet for table use for those who like honey, and there is no good reason why we should deny the privilege of honey to the day laborer and the many millions who are dependent upon meager salaries; but expensive packages and frequent handlings in melting and exchanging, all the foolishness of putting it in glass for people to look through, does put it beyond their reach.

I think I hear some say that it is just the laborer that will buy honey; but to all who think so, I ask you to make a close estimate

of the cost of keeping an ordinary family; and when you have done so you will find that the man who works at \$1.00 per day, and is at it every day in the year, can not buy much honey or any other sweet at 15 to 20 cents a pound. I know what I am talking about, for I have



A SCENE IN OBERLIN.

"Wot yer got, Chawley, me boy?"
 "Honey! honey! doncherknow?"
 "Aw, doocid little of it, Chawley."
 "Yas, but then, Gussie dear, after I eat me honey
 donchersee what a clever tooth-brush holder I av?"

been in a position to know about these things, and have looked carefully into the matter. I confess my sympathies are with the poor laborer. Yes, I do know that many who get what is called good wages squander it in drink and reckless living.

Those who are contending for glass packages, and showing the honey in glass that it may sell itself, tell us that glass is used more and more, and we must use it or we can not sell our product. That claim has no foundation worthy of consideration. No doubt glass is used more and more, so are a thousand other packages. Glass is not on the increase, except for those who have grown wealthy, and desire to pay big prices. It is a piece of the same kind of foolishness that caused a certain lady to refuse to buy a good piece of goods because the price was only \$100; but when the same thing was put up at another place, and at \$500, it was eagerly bought. Some people do not seem to care for quality so long as looks are all right, and the price beyond that which a poorer neighbor can pay.

After eliminating these foolish people who sacrifice all for looks, and those who want fancy things that they may outdo their neighbor, and all such foolishness, there is the great mass of the people who want that which will serve them best for the least money. This class is the great majority. With all classes there is much of the distrust and suspicion of fraud in the things they purchase, and they have good ground for being suspicious. This distrust can be overcome only by education. The people believing things are

adulterated is no excuse whatever for putting only liquid honey on the market. I say, too, that the idea that people will not get used to candied honey, and have confidence in it, is mere foolishness.

When people have something new they just proceed to introduce it, and it soon goes if it has merit. If the people do not know what candied honey is they will quickly learn. A little enterprise to explain and get some to try it once, together with the knowledge that they can do the melting themselves, and so get the honey much cheaper, soon accomplishes the result. I can not think otherwise than that those who say the people "*will not* take candied honey" are decidedly lacking in push and business ability.

When at the Chicago convention in August, a bee-keeper told me how he had been always putting out liquid honey, and how he lost a wealthy customer. His custom was to sell in small quantities so that it would be consumed before candying. This particular customer, for some reason which I have forgotten, did not use his honey for some time; so when he did get ready to use it the stuff was all sugar. He at once concluded he was paying fancy prices for sugar, and when the honey-man came around again he was peremptorily ordered off, and was not even allowed to attempt an explanation. No more honey was sold there. You see that customer had been *educated to expect his honey always liquid*, and so was deceived into thinking that pure honey was so. A little education, showing the people that honey will candy, teaching it in print where it will be read, selling a sample with a warrant that it will again assume the liquid state, and have the honey flavor when properly handled, will soon bring it into favor.



"WELL, SO LONG, MR. FOWLS!"

But I wish again to return to a consideration of the package. It is not the custom to have goods put up so as to display them through glass. Crackers and cookies, candies, nuts, dried fruits, etc., are shown through glass; but I will make a guess that Mr. Chalon Fowls has never carried home more than a hundred of these show-cases, boxes, and stands; and 99 times out of 100 when he buys groceries he carries home a paper, tin, or wooden package. He calls our attention to the fact that even

cheese at his store is displayed in glass—ha, ha! but I'll bet if he carries off that display glass he will soon bring it back. I think I see Mr. Fowls going home with his cheese in a glass box. Who ever heard of glass packages for cheese?

Yes, yes, Mr. Fowls; display can not be ignored and do ourselves justice in getting our product before the consumer; but that is no argument that the consumer should have to pay for a *display-stand* every time he makes a five or ten cent purchase. I tell you the people will quickly learn the nature of honey to candy if you will give them a chance to learn it, instead of trying to keep them in ignorance of the fact; and they will appreciate an effort on your part to give them good gilt-edged honey at a fair price without having to buy a glass-factory. We want the cheapest neat and serviceable package we can get, that thereby we can get the product to the consumer with little extra cost.

Let those who have been selling honey as a luxury only, get out something that the poor people can buy, and you will be surprised how much you will increase your business. Had I some of those high-toned customers that want us to sell them high-priced goods I would supply their need (desire), but I would also try to meet the *needs* of the poor, which would be more honorable, and a good business proposition.

I am putting up my honey so that it is a rare thing for me to sell single pounds. The pound deals belong to the well-to-do fancy trade; but when a common every-day man comes he wants honey to feed the children, and seldom buys less than 25 to 50 cents' worth. It is better to have ten deals of five pounds each than 20 one-pound deals. The smaller the package the greater the proportional expense per pound for first cost of vessel, and the greater expense in time, filling, etc.

My four-pound pails, nicely lithographed with business card and liquefying instructions on them, cost me from 5 to 7 cents each; larger pails in proportion; the three sizes of 4's, 7's, and 14's cost about a cent per pound on the honey, averaging all around. The honey is drawn into these pails while yet liquid, and once in them there is no melting or other expense to run up the cost.

Again, touching on the packages in general use for all kinds of groceries, while many things used to be weighed out of bulk packages, and tied in paper, now these goods are put in packages at the factories. In this respect the West is ahead of the East in many ways. The wheat and oat preparations, dried fruits, and a great variety of dry products, are put up in some neat and *convenient* paper package, and wet goods are in tin, except a few things. Two prime objects are kept in view—to make it convenient to handle, and to cheapen the article. It is very much quicker and cheaper to hand out a ready-packed piece of goods in such quantity as is generally called for than to weigh out of bulk. Do away with the liquefying and trading honey, and you take off a useless expense.

I said the West is ahead of the East in many ways, and I will mention several. Here every housewife or butter-maker puts the butter into pound prints or rolls, and these are wrapped in butter-paper. Our storekeepers would not think of ladling butter out of a tub by any quantity you might want. You buy by even pound or any number of even pounds. Another great improvement is the decimal system of counting. Wheat, oats, corn, and all grains, potatoes, apples, onions, and all such, including squash and cabbage, are sold by the pound or hundred. There are lots of people here who could not answer you if asked the price of any product by the bushel. A peck or bushel measure is seldom seen in stores; but the scale is everywhere in evidence.

We need to simplify our methods, and leave off the old slow methods that are out of date.

BOTTLING HONEY.

Questions Answered; Bottling Cold Honey, and Heating Afterward.

BY WALTER S. PODUER.

[I would say to our readers that this is an answer to a series of questions asked of Mr. Pouder at the close of his first article on bottling honey, which article appeared in our issue for Oct. 15, p. 802. As some of our readers may not have this number handy I would state that I asked Mr. Pouder *why* he poured his honey *cold* into the bottles, and then heated the same afterward before corking; whether he did not consider 190 degrees of heat as a little too high, and what preparations he considered best for dipping the corks into before inserting into the bottles. As will be seen by that which follows, Mr. Pouder has answered these questions.—ED.]

A speedy method that can be practiced by any bee-keeper, without the aid of steam-pipes or expensive appliances, is what the readers of *GLEANINGS* demand, I believe. May be if I had a tank equipped with a steam-coil I would heat honey for bottling on this plan; but I am not so fortunately equipped, and I think many of us are no better off. I prefer to do bottling with cold honey early in the fall, before granulation starts, thus requiring but one heating just before the labels are put on. The corks can be inserted and the filled jars stored away, and what better storage vessels could one wish for? This can all be done at odd times without interfering with other work. If I heated my honey and then filled the jars with hot honey, the work would have to be done hurriedly; if finished up they might not look fresh and clean as those that have just had a hot bath and a clean new label. This cleaning up and labeling can be done just before the goods are delivered, so that no part of the work need be done in a rush. A number of years ago I laid aside the use of thermometers in connection with melting granulated honey. I have seen the water boil, which must have been at a temperature of 212, and the honey in the jars would indicate a much lower temperature. To be sure, it would not do to permit the water to boil any length of time, and it is a great mistake to allow the water to come to the boiling-point at any time. With a little experience one can

tell when the jars are sufficiently heated by occasionally lifting out a jar.

I have often been asked how to simplify the insertion of corks. I take a pail containing water to the depth of half an inch, and fill the pail with corks and place on a lid. Let the water boil a few minutes, and they are ready for use. Do not use the ones that are water-soaked, but use the steamed ones. You will find them soft and pliable, and none will break. The water-soaked ones can be used at another time.

I have experimented with different waxes and combinations of waxes, but have found nothing that suits me as well as paraffine and beeswax, about half and half. Half a teaspoonful on each cork, immediately after removing from the hot bath, does the work neatly, and a side label and a tinfoil cap make them ready for delivery. It is difficult to learn how to put on the foil caps neatly; but a little practice is all that is required. I use a $\frac{1}{2}$ -inch strap, which is securely fastened to the table; wind it around the neck of the jar, with the strap in my left hand and jar in right hand; pull snugly on the strap, and this will smooth down the edges of the foil beautifully.

Indianapolis, Ind., Nov. 14.

[At first I was inclined to believe that the honey should be heated to the requisite temperature before bottling; but after some experience in putting up bottled goods we have come to the conclusion that Mr. Pouder is right in saying that the bottles should be filled while the honey is cold, for the simple reason that this part of the labor can be done at any time when one has leisure. Of course, the jars containing the honey must be heated before they are sealed. This is done by setting them in a vat of hot water nearly up to their necks, and keeping them there till the honey is heated clear through, reaching a temperature anywhere from 160 to 180 degrees; then while hot the jars should be picked up by the neck, and corked. When sealed, an attendant can, with a moist rag, wipe them clean, and label them; or one can do all the work himself if he chooses.

Mr. Pouder makes another good point when he says he makes a practice of mixing his raspberry, basswood, and clover honey before bottling. To give a set of customers at one time a flavor of basswood, and at another time a flavor of clover, always creates suspicion. If consumers get the same taste every time, and it is easier to maintain the same taste by mixing, no objection will be raised to the second lot of honey. Then this is true: There will be times when one will be able to get but little clover honey—take, for example, this past season; but if we can get just a little, and then mix basswood with alfalfa, mountain sage, or some equally good flavor, we can still hold the trade.

On this particular point, Mr. Selser's practice—and he is, perhaps, the most extensive bottler of pure honey in the United States—is quite different. He puts up only clover honey. Basswood, no matter how good, he will

not have at any price, because he says his trade will make trouble for him if he puts up any other flavor.

These are points I should like to have our honey-bottlers discuss; and particularly should we like to hear from Mr. Selser.

I should like to ask Mr. Pouder a few more questions. What is the size and depth of your melting-vat? Is this vat of water heated on the stove or by means of a steam jet? Do you find it necessary to have more than one vat—one, say, for two-quart Mason jars, and another for short jars like the Muth? If the vat is heated on the stove, do you find it necessary to have a false bottom in the vat to raise the glass jars slightly above the bottom of the vat, to prevent breaking the glass? If the bottom of the jars come in actual contact with the bottom of the vat, they would receive a greater heat than if they were raised up so there could be a complete circulation of water under. Another question: Should the corks be a trifle large, and put in with a corking-machine, or is it sufficient to have them just right, and put them in by hand? Should a large or small label be used? and should it be on the cork or on the front of the bottle? Again, please tell the readers how you wash the jars. This may seem like a simple matter, but certainly there are good ways and poor ones. After the jars are washed, do you rinse them with hot or cold water? In either case, how do you dry them out?

There are three or four others who are writing a series of articles on this subject, and I wish they would place before them this same set of questions, for I hope no one will take it for granted that certain things are well known, and, therefore, do not need amplification.—ED.]

BOTTLING AND SELLING HONEY.

Importance of Filling Jars while Hot, and Filling Full; "Extracted" and Candied Honey.

BY GEO. SHIBER.

I was very much interested in the article of Mr. Pouder in the Oct. 15th issue, on bottling and selling extracted honey, as his experience is so parallel with my own. I thought, after reading it, that perhaps my experience in this line would be interesting and profitable to some who had not thoroughly mastered the "knack" of selling honey in the extracted form. Oh that word *extracted*! what a terror that was to me! It somehow has the ring of extract, or honey extract, extract of honey, a sort of adulterated sound to the uninitiated. But I believe I have mastered the term so far as its prejudicing my trade is concerned.

I am not a large bee-keeper, having only a few colonies for comb honey, which always easily sells; so with selling comb honey this article has no concern, but selling only extracted from the dealer's standpoint. As I have for some years past conducted a retail store, grown from boyhood to manhood in the business, I make the statement that any grocer will welcome and buy any article that is

good and will sell at a fair profit. This is a fact; and it is also a fact that the selling of goods to the retailer is a fine art; and the man who does it commands a good salary, though it's hard, nerve-tiring work.

A year ago this present month, comb honey being hard to obtain in this section, I thought I would try my hand at selling some extracted. I accordingly ordered of F. H. Leggett & Co., of New York, two cans of California white-sage honey. One reason I ordered the sage honey was that, in an old edition of the A B C, I found these words: "One striking peculiarity of this honey (sage) is that it does not candy, but remains limpid during the severest winter weather." Nevertheless the sage honey I got did candy in very mild weather. When the honey arrived the house had mistaken my order; and instead of sending two cans they sent two cases of two cans each, or 240 lbs. I thought at first I would send half of it back; but upon examining it I found it to be a fine article, and made up my mind to sell it. I bought a gross of white glass fruit-jars, pint size, and found they held about 1 lb. 11 oz. At first I filled the cans with the cold honey, but it candied too quickly. I remember selling to an intimate friend of mine a can that had candied. The next day he brought it back, called me aside, and very solemnly said, "Shiber, that's made stuff; there is no honey about it." Well, I knew better than that, as it was bought and billed to me as "strictly pure honey," and I knew the reputation of the house I was dealing with. This man afterward became a good customer. I converted him with the bee-books. I kept the A B C, Cook's Guide, Langstroth, etc.; showed him pictures of extractors, etc. After that I stopped trying to sell it after it had candied. I would then convert it to the liquid form with hot water in the regular way. I then sealed it up while hot, and that did not candy again—that is, before I sold it. From this I took a hint and afterward put one of the 60-lb. cans in a wash-boiler filled with hot water. When it got heated through it was poured into the cans, sealed air-tight with the rubber fruit-jar rings, and remained liquid until sold. I will say further, that, by the holidays, it was nearly all sold, and I had educated my trade to use extracted honey, *and call for it*, and had made money doing it.

Another thing that made it sell was that I kept it always in sight, right under everybody's nose who came into the store. I want to whisper into every bee-keeper's ear, when you sell a grocer extracted honey, insist on his keeping it right on his counter, or at least a part of it there, so that it will be impossible for one to come in without seeing it. Seeing it will lead to inquiry and often to a sale; and, gentlemen, it will surprise you how much even one store can sell in a season. Sealing it when hot (the editor says 180 degrees is the limit, and I think he is right), keeps it from candying for a long time. And then I like the fruit-jar for a package. It is useful after it is empty. Bottles are as expensive as jars, and they are of very little value to the buyer. The cost of them has to be added to the price

of the honey, and so does the jar; but it is worth the price to the average family, and sells far more readily.

Another point in bottling is to fill the package full, sealing it while hot. This is an additional preventive of early candying. This point I learned from GLEANINGS awhile back, and have since found it to be valuable.

One more more in regard to the word "extracted." When people would come in and ask what that stuff in the jars was I would instantly respond that it was honey taken from the combs by a machine called an extractor, thrown out by centrifugal motion, hence the word "extracted." When you sell extracted honey to a person who does not know what that means, don't let the word stay in his mouth long without following it up with an explanation; for before he gets the explanation his mind is forming an opinion, and we want that opinion right. This can be obtained by following quickly with the explanation; then we are ready to make the sale, for we have said the right thing in the right place. In selling a new article it's what the seller says, and how he says it, that sells the article. Then if the buyer likes it he buys more. If the buyer happens to be a dealer he will buy some more to sell again. That's the knack in a nut-shell.

Franklinville, N. Y.

BOTTLING HONEY.

Reasons for Heating the Honey and then Bottling; How Hot should the Honey be Made? Style of Glass Packages to be Used; Mixing Various Honeys.

BY CHALON FOWLS.

In giving my method of bottling honey I do not claim that it is the best one. Indeed, it is quite likely some one else may have some better plan; and if so I hope he will bring it out at this time so that we can all learn how to do the work in the best and most expeditious way. The plan given by Mr. Pouder, on page 801, may be better than mine in some respects; but, not having tried it, I could not say. Though he does not say so, I infer he would run his whole crop into the bottles before it has candied, and then liquefy and seal only as fast as needed for his orders. With me this would make too much work in the summer, when other work is pressing. Otherwise, if the honey is left in bulk until it is candied it would look as though it would have to be heated twice to finish the job. I should suppose, too, that it would be difficult to put in just the right amount when cold so that the bottles would be full when heated, and not too full, so as to run over. Perhaps Mr. Pouder will explain those points more fully in another article, so I will now proceed to give you my own method.

In the first place, I aim to put up none but first-class honey, weighing not less than 12 pounds to the gallon, and the same kind year after year. When I have to buy to supplement my own crop in a poor year like this, I

get the same kind, as nearly as I can, so consumers will get the same flavor they are accustomed to. For instance, this year, having bought some mixed clover and basswood from Wisconsin, I am mixing in clover honey from Michigan, as I find the Wisconsin honey has not as large a proportion of clover in it as is natural to my locality. Instead of putting up a large quantity at once, as some do, I put up only as fast as needed for my trade. I use six-gallon lard-cans as storage-cans for my own crop; and when buying I get it in five-gallon square cans when possible. For liquefying they are placed in cans large enough to admit of having three or four inches of water underneath and surrounding the honey. The liquefying-tanks had better be made of copper, as tin soon rusts out; and if the tank gets rusty the water will cause the honey-cans to rust too. A wood or coal stove may be used in heating, but it needs constant attention to keep the fire just right; and I now use and prefer a gasoline-stove for the purpose, first heating the water boiling hot on the kitchen range, to save time. It is safe to start with the water at the boiling-point, as the cold honey lowers the temperature at once. The gasoline flame can be regulated so as to keep it just hot enough. In fact, I have sometimes put the honey on to melt at bed time, and then went to bed, leaving it melting all night; but in that case I should leave the flame low enough so the water surrounding the honey would be not higher than 150 degrees; for it should be borne in mind that the temperature will rise as the honey gets melted. It's very easy to ruin the honey by getting it too hot, especially honey of delicate flavor, like that from white clover and all varieties that contain pollen grains. Pure basswood honey, owing mainly, I think, to the absence of pollen grains, may be heated much hotter without damage.

While it is probably all right for an expert like Mr. Pouder to heat his honey to 190 degrees, I think the limit of 180 degrees, as given by the editor on page 802, or 160 degrees as given in the A B C of Bee Culture, is much safer to give out to the general public. I have had clover honey that would not stand 190 degrees without impairing the flavor, and, of course, would be ruined if allowed to get much hotter; and for my part I can see no need of heating so near the danger-point. I think it best to melt slowly, allowing, say, five or six hours for clover and two or three hours more for basswood, and not letting the temperature rise above 150 degrees for clover or 160 for basswood, until it is melted so no lumps can be found in it. Then the temperature should be raised about 20 degrees, and held there an hour or so, when the honey is ready to put up. The tank I use in filling bottles and tumblers holds about 16 gallons, or is large enough to hold either three five-gallon square cans full or the contents of two of my regular six-gallon storage-cans.

My clover and basswood honey is always light in color, for, notwithstanding the heavy expense for large apiaries, every hive is provided with a queen-excluding honey-board,

and consequently my extracting-combs are clean. But in buying I often get honey which, owing to having been raised in dark combs, is darker than my own, though equal in body and flavor. In this case I put in two or more cans alternately, as mentioned by Mr. Pouder, so as to equalize the color as well as the flavor.

My filling-tank is set over a pan of water, and the whole thing set on the step burner of my gasoline-stove, so the honey can be kept hot during the process of putting up. I used to dip out part of the honey from the can in the melting-vat, and lift out the can from the hot water, and pour in the rest of the honey. But the five-gallon square cans had to be lifted out bodily by a slender ring at the imminent risk of being scalded by the ring breaking loose; so I now use a glass siphon to run out the honey into the filling-can. I prefer to keep the honey up to 140 degrees or more until it is sealed up in the bottles or tumblers.

I have never used wax in sealing up, and do not think it necessary if packages can be sealed air-tight without it. The main idea is to cause a vacuum, as in canning fruit; and to aid in securing this the packages should be filled as full as convenient with the hot honey, and there will still be a space left when cold, the same as in canned fruit; and the smaller this space is, the better, as the honey will then remain more quiet, which is important.

It may be interesting for clerks or customers to invert a jar or tumbler of honey, and watch the bubble of air rise slowly through the honey, and it may also be an effective way of showing the body and general attractiveness of the honey; but the more it is moved back and forth, the sooner it will grain. Just imagine, if you can, how it would seem to have honey put up by the bees in their waxen bottles in such a slipshod manner that it could be slopped about from side to side or from end to end, and then remember that honey rarely candies in the comb unless exposed to a very low temperature.

On page 802 the editor asks why it will not do to bottle up honey cold. I will answer that by saying that, if I were asked the quickest way to make honey candy, I would say, "Pour it cold from one dish to another." Besides this, it would not stay in the bottles, as there would be no vacuum; and just as soon as it was put in a warm store, it would expand and stream over the sides.

I well remember putting up a dozen glasses for a grocer who would not wait to have it heated, saying it would do just as well to put it up cold. He never wanted any more like that. Every glass ran over, although not filled quite full; and the fun of it was, they never stopped running over. He would wash them all off clean every morning, and they would begin to stream down the sides before noon, or as soon as it got warm in his store.

But, to return to my process. I have never used the square bottles and corks, as I have always felt it would be an imposition on the consumer to give him a comparatively worthless bottle with his honey when I could just as well give him something that would be useful for some other purpose. I have heretofore

used jelly-glasses and pint Mason jars; but lately I have got to using the No. 25 jars sold by The A. I. Root Co., and like them best of all. They hold a full pound, and are the most perfect self-sealing fruit-jar that I have ever seen—have a smooth surface to stick on labels, etc. The jelly-glasses are much harder to seal, but it can be done so that but few will leak by using two or more thicknesses of pa-

per would float as soon as it began to get light. The second picture shows the process of filling, sealing, and labeling glasses. My daughter, Violet, is seated at my left, filling glasses from the tank, while I come next, capping, with Mrs. Fowls seated at my right, labeling. The labels should always be put on while the glasses are warm, as they stick much better at that time. We use a small label, one by two



FIG. 1.—MR. FOWLS; HIS MELTING-TANKS, SIPHON, AND GASOLINE-STOVE.

per, putting smooth tough paper like manila or waxed paper next the honey, and some soft spongy kind on top of that, like that used for pencil-tablets.

The first picture shows the process of liquefying on the gasoline-stove, with siphon in place to run the honey into the filling-tank. Of course, it is necessary, first, to run out the water that surrounds the honey-can, else the

inch, gummed, first passing it over a moist sponge and then applying it to the glass. The sponge is tied to a small board, and the board fastened down to the table so it will remain stationary. It will be seen by the picture that the caps are put on the glasses by forcing on by the hand, while the operator has to stand in a stooping position. This is because I use paper enough to make the covers go on air-

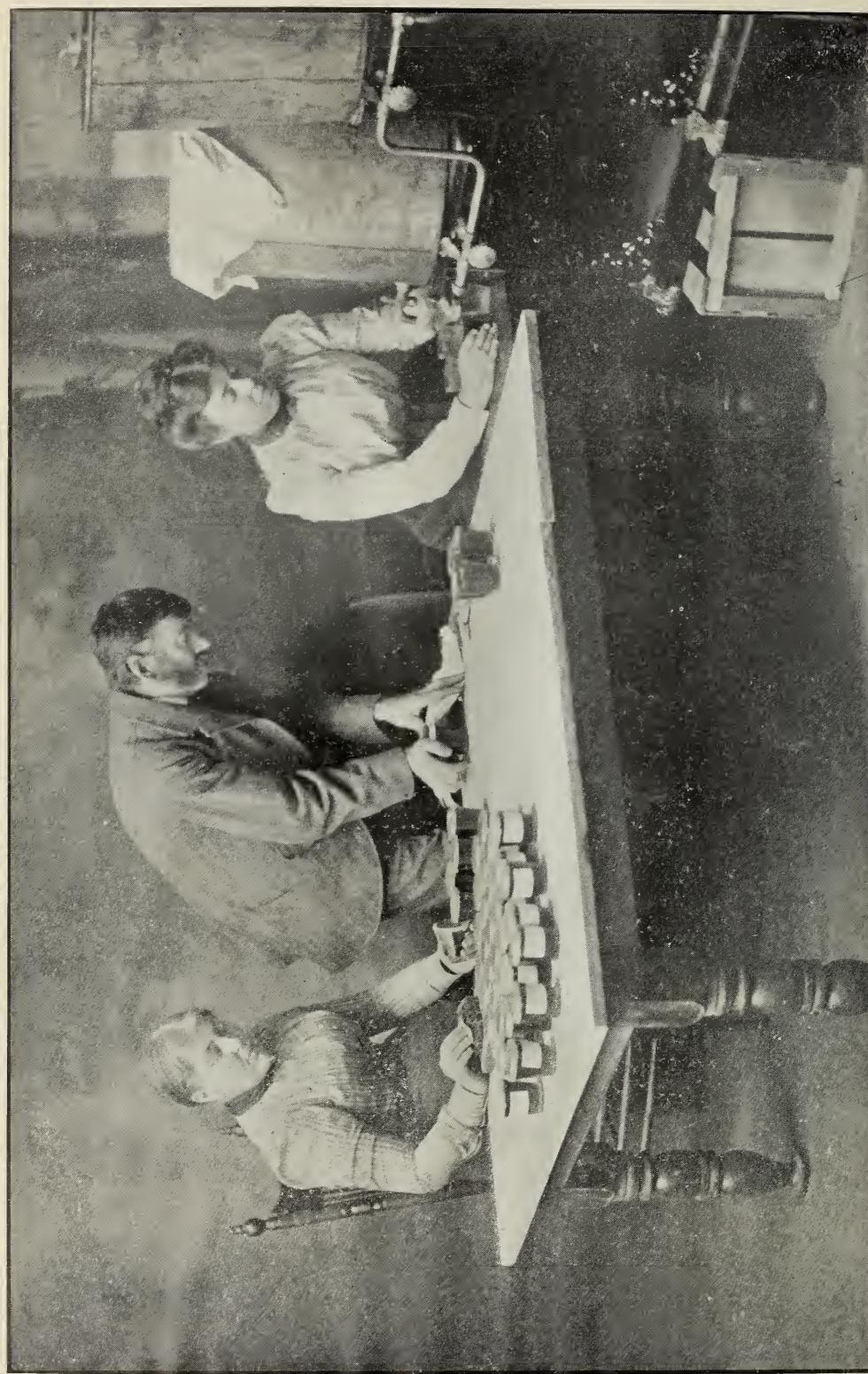


FIG. 2.—MR. FOWLS AND HIS FAMILY FILLING, SEALING, AND LABELING HONEY-TUMBLERS.

tight, and have to bring some weight to bear in order to do it. I have tried other ways, but had to come back to the old tiresome way, so the fingers could be used to guide the covers on straight. Perhaps I can best describe it by saying that I put on the covers as the Irishman played the fiddle. When asked whether he played by ear or by note, he said, "Nayther, but by main strength, be jabers."

Oberlin, Ohio, Nov. 27.

[As I have before explained, friend Fowls is a bee-keeper whose acquaintance I made while I was studying at Oberlin College 20 years ago. At that time he had just started in the business; and if ever a man had a real case of bee-fever, he was the one. Many and many a time he came to my room and talked bees. During the subsequent years we have kept more or less in touch.

Knowing that he has had an extensive experience in bottling and retailing honey, I requested him to go into the matter exhaustively, giving details step by step. I also asked him to have some good photographs taken at our expense, illustrating the various processes that he was to describe, and this he has done.

It is to be noted that Mr. Fowls heats the honey, and *bottles it while hot*, while Mr. Pouder, who also does a large bottling business, *bottles while cold*, and then heats the honey. There may be special conditions when one method may be preferred to the other; and in Mr. Fowls' case this is particularly true, as he says he can do no work in summer. The A. I. Root Co. has been using to a limited extent the Pouder method of bottling while cold, and heating the honey while in the bottle. I am inclined to think that, where one has steam, and plenty of it, the latter plan is preferable, because the temperature is regulated to an absolute degree if desired. But I will describe our method in the near future.

I believe Mr. Fowls is right in saying that 160° F. should be considered the highest point to which honey should be heated for bottling. When I stated 180° in GLEANINGS I was under the impression that I was giving the same figure that was in the A B C book. At the time the article in the last named was written, I remember that a bee-keeping friend of mine made some exhaustive experiments in determining the degree or degrees of heat which average clover honey would stand without injuring its flavor. The result of those experiments showed that 160° was about as far as one could go, on the average, although a few minutes' temperature slightly above that would do no harm. I wish to recall, then, the statement that I made in these pages, that 180° was the right temperature; and, strangely enough, the early experiments of my friend coincide almost exactly with the statement made by friend Fowls above. I have known honey to be heated to 180° without injuring its flavor; but as long as the 160 limit serves the purpose of preventing candying for at least six months (and I have known it to keep it liquid for two and a half years when properly bottled), then we should consider 160° high enough.

Still another fact is somewhat interesting right here: Our honey-man, Mr. Boyden, in arranging to heat the honey for bottling, said he disagreed with me that 180° was the right temperature. His experience had shown him that 160° was enough to prevent candying, and he saw no reason for heating it more.

A great deal of bottled honey put up by bee-keepers has been ruined by carelessness in heating it. I have tasted samples, and have been disgusted, to say the least, to notice that otherwise good honey should be almost entirely ruined. Honey brought to a temperature of 200 , and kept there for half an hour, will taste as if it had been almost burned; and if it has been actually boiled, one, on sampling, is reminded of burnt taffy.

It seems as if we had had almost enough corroborative proof on the question of temperature; but let us have reports from bee-keepers who have had experience in bottling. M. H. Tweed & Co., of Pittsburgh, have done a great business in this line, and perhaps they would be willing to give us their experience.

Referring to the photos, it is interesting to note that the bottling is all done by Mr. Fowls and his family. That means a greater perfection of work than could be accomplished by ordinary people working for day's wages. The family are all in partnership; that is to say, each member is individually interested in keeping up the quality, and at the same time increasing the sales.

GLEANINGS is glad to introduce Mr. Fowls and his family to its readers—his family—well, perhaps I had better say they are not all represented. At some future time we may have the pleasure of showing the whole force, each in his or her individual capacity, bottling honey.—ED.]

BEE-KEEPING IN CHILE.

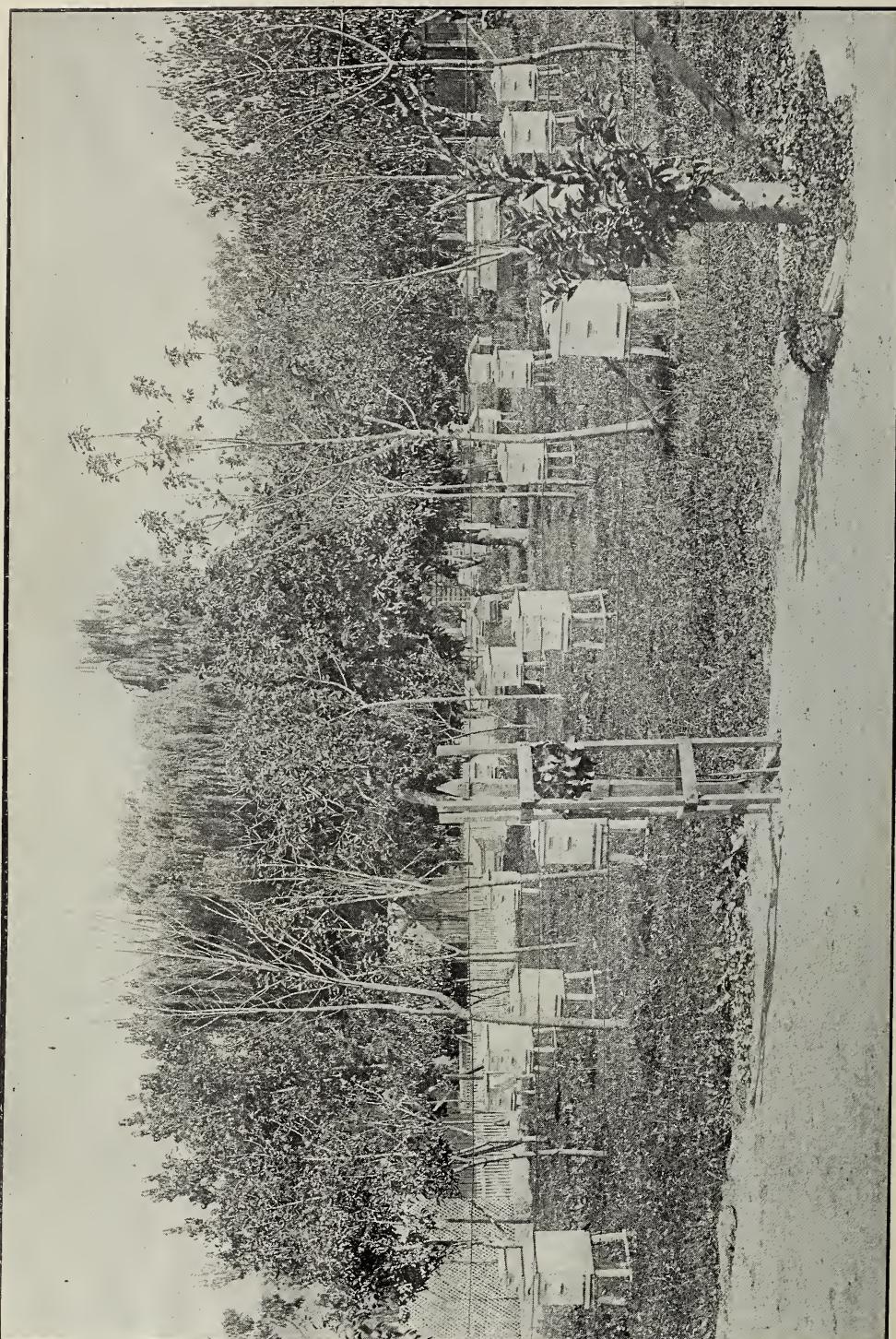
BY OSCAR SPOERER.

We send you by post a photo taken by us of the first installation of your bee-hives in Chile. It represents 20 of your Dovetailed hives in the agricultural school of this town (Concepcion) last year. Although the last winter was very severe, the hives, without any covering, were perfectly sound, and the families in a splendid condition. This year double the amount will be added to this installation. The idea of the directory is to increase it gradually every year.

We think this may be of some interest to your company.

Concepcion, Chile, Sept. 22.

[The countries in the South American continent are making great strides; and foremost among them is Chile. We are very glad to get a peep at an apiary in the far, far Southland; but, why hives on stilts? Is it because of floods, or because it is easier to work the hives? I suspect the latter, and I don't blame any one for desiring to work the hives in comfort. Hives on legs or stilts is an English fad. We should be glad to hear from you again, friend S.—ED.]



A N APIARY IN CHILE.

TONGUE OF A WORKER BEE.

How the Bees Gather Nectar.

BY E. R. ROOT.

Of all delicately constructed pieces of organism, the tongue of a bee is one of the most elaborate and complicated in its general plan and arrangement of any thing that we find in all animated creation. Wonderful as is the sting, complex as are the compound eyes, and beautiful as are the silken wings, the little ap-

paratus with which the bee takes up its food excels them all. Probably not one bee-keeper in ten thousand ever thinks of the tongue of a worker as being any thing more than one little flexible tube through which it sucks the nectar from the flowers; and it is but natural that one should so conclude after he watches one of his little pets with a glass, as it draws up the liquid sweet with that beautiful little tawny proboscis. But, strangely enough, it is not a tube, strictly speaking, but a combination of four *false* tubes formed by the over-

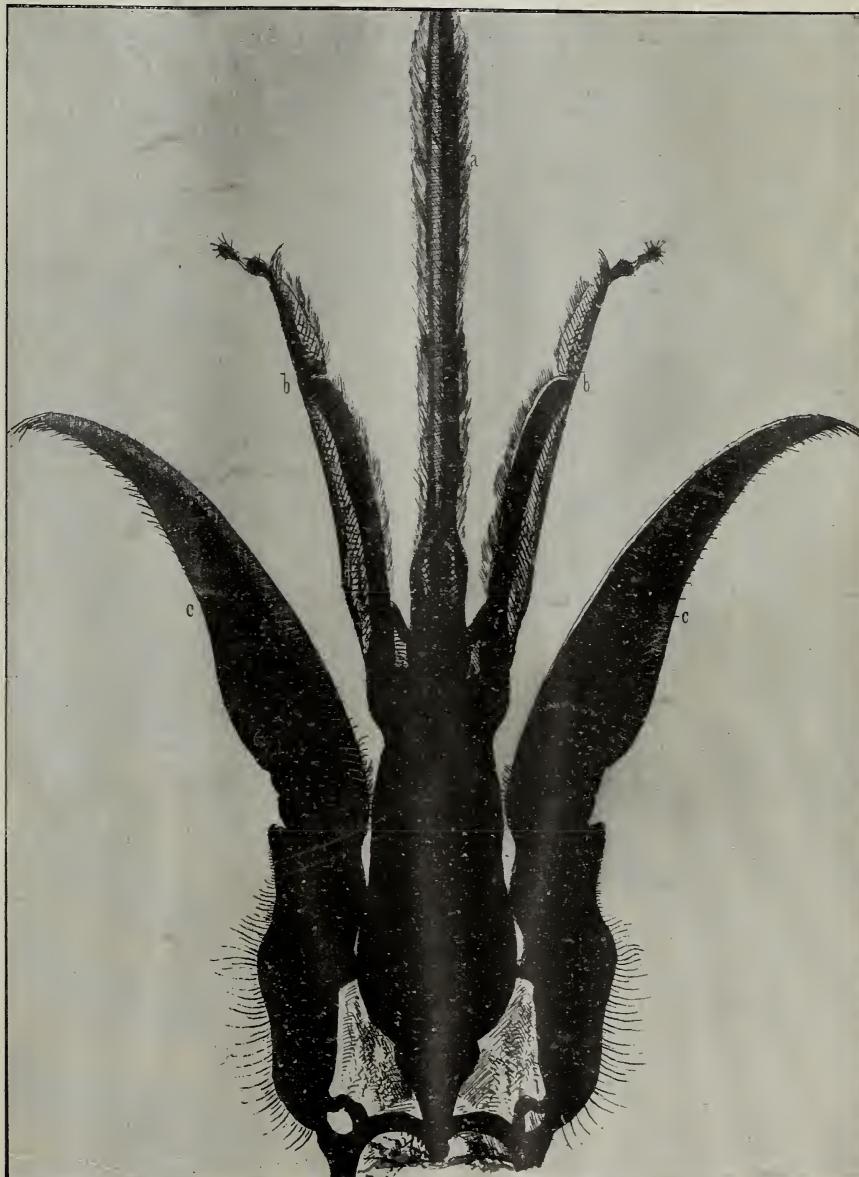


FIG. 1.—TONGUE OF A BEE, GREATLY ENLARGED.

lapping and folding of parts. The whole little organism, delicate and minute as it is, consists properly of one tongue inside of another, and both parts—the inner and outer—are so constructed that one large tube can be formed around the smaller one. In Fig. 1 we have the tongue as it has been dissected from the head of the bee. The two large branches on the side, *c c*, are called maxillæ; the two smaller ones inside, labial palpi. These four close together, the former set above the latter, forming a tube through which the tongue proper, *a*, can work back and forth. See sectional views Fig. 2, at C, D, and E respectively. The tongue, or ligula proper, *a*, Fig. 1, has a very minute groove running its entire length on the front, or on the top side as we look at it. On either side of this minute groove there is a sort of bend, or fold, which makes two more ducts (see G, Fig. 2). Where

a minute quantity of nectar is to be gathered, the central groove in the tongue will probably take care of the entire amount. If there is a larger amount, sufficient to fill the two side ducts as well as the central groove, they will all be brought into play. In such case, the tongue, as it sticks out of its sheath, so to speak, will be seen bent backward, sweeping sidewise over the surface that contains the liquid sweetness. When the bee desires to gulp down a large quantity of liquid at a time it makes use of the larger tube formed by the maxillæ and labial palpi both together. The question might be raised, "Why did the all-wise Creator make a proboscis for the bee so complicated as this? Why would not a single tube have been sufficient?" The tongue of a bee, elaborate as it is, and as large as it seems to be in the picture presented, is in reality so small as scarcely to be seen by the naked eye.

If there were a tube running the entire length through the tongue it would necessarily be so minute it would fill up, as Cheshire points out, leaving the dry honey or particles of pollen. Then if a bee had to depend on the small opening in the tube it would take it a long time to store its honey-sac full of nectar or honey if a large quantity of either were available. So Dame Nature steps in and provides four pseudo or false tubes—one large and three much smaller ones—the last set inside of the other, either of which may be separated apart and opened out so that the inside of the tubes can be thoroughly cleaned; and then when cleaned the parts are put together in the twinkling of an eye, and the process of sucking up the sweet juices continues.

In Fig. 2, taken from Cheshire, are shown sectional views as well as longitudinal views of the tongue as a whole. In C, D, E, respectively we have cross-sections showing the outer and inner sets of tubes; *mx*, the maxillæ in connection with *lp*, the labial palpi, are folded together in the manner as shown, forming the large tube, through which large quantities, when available, are taken. At *c d* in G is shown the groove I have already referred to, and through which minute quantities are drawn. At *s d* in G is shown one of the side ducts through which a still larger amount may be drawn. All three of these close by folding, forming tubes. At B we have a

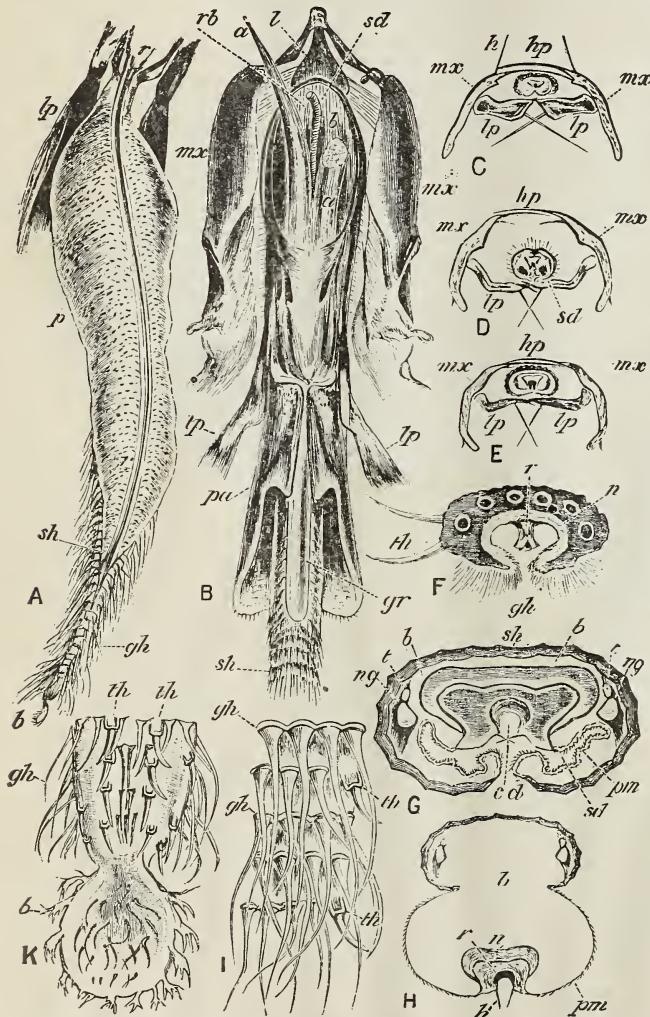


FIG. 2.—SECTIONAL VIEW OF THE TONGUE OF A BEE.—AFTER CHESHIRE.

portion of the tongue, showing how it is attached to the mentum. At A we have the same view, but the tongue is distended, according to Cheshire, by forcing blood into it, so that in a sense the tongue is turned wrong side out for the purpose of cleaning. At K we have the end of the tongue, or what is sometimes called the "spoon." Delicate hairs (they do not seem very delicate in this view) serve to assist the tongue in gathering up its sweetness and enable the liquids, by means of capillary attraction, to be drawn upward into the central groove and side ducts already spoken of. We have then four channels for the conveyance of nectar through the proboscis; viz., C, D, E, Fig. 2, when large amounts of nectar are to be gulped down, and c'd and s'd in G for smaller amounts.

For the information given above I am indebted to both Cowan and Cheshire, who, it seems, have drawn on others as well as from their own extended studies and investigations.



BEE-KEEPING FOR FARMERS.

"Good morning, Mr. Doolittle. I am a farmer, and I am thinking of adding, to general farming, a few bees next year: so I came to see you and have a little talk regarding hives for farmers, and something about how to manage them and the bees. What hive would you think it best to adopt? I wish to make the hives this winter during leisure hours."

"I think your name is Lyon; and if so I would say, in answering your hive question, or in giving my views on the same, that very much depends upon how Mr. Lyon intends to keep his bees, and what time he expects to spend on them. If he intends to hive the swarms only when they issue, and put on the surplus boxes when the white clover commences to bloom, paying no other attention to them (which is the way the average farmer cares for bees), then I would say that the box hive, known as the Miner hive, is as good for you as any hive in existence."

"Why do you single out the Miner hive from all other box hives or log gums of the past?"

"Because, should you ever wish to sell your bees they will bring from fifty cents to one dollar more per hive than they would in any of the others, on account of the provision Mr. Miner made by way of slats set on edge, so that the bees nearly always, if not quite, build their combs straight and true, so that, when they come into the possession of a practical bee-keeper, they are easily transferred to any of the movable-frame hives."

"But suppose I wish to work my bees to the very best advantage, and give them all the needed care, then what would you advise?"

"If you are willing to give the bees the

attention which they require, which is far less for each colony that you would give one of your hogs or cows, then I would say that nothing short of a good movable-frame hive will be good enough for you."

"What frame hive would you advise?"

"You have not told me in what part of the country you live, so I will say that much will depend on your locality."

"Well, without telling you just now regarding this matter, what would you advise for the South?"

"If you live in the South, then what is known as the Langstroth hive is as good as any."

"But suppose I live north of this latitude, which I think is about 43 degrees, then what?"

"Then I should prefer a hive having a deeper frame, especially if the bees are to be wintered out on their summer stands."

"Why?"

"For the reason that it is believed that bees can withstand the cold better where they can cluster as nature prompts, which is in a sphere about a foot in diameter, and they will build up faster in the spring, here at the North, when in a deeper frame than the Langstroth. However, the Langstroth hive is a good hive for all latitudes south of 43°, when properly managed, while some prefer it still further north."

"Successful wintering would be quite an item, I should think."

"Yes; the one item of safe wintering, which means strong colonies in the fore part of the season, is the main thing to be looked after where the crop of white honey comes early in the season, as it always does where white clover is the chief source of supply; and the hive which helps to accomplish this item the most surely and perfectly is the one the farmer, or any other person keeping bees, should look after. Lots of bees in time for the honey harvest means success to their keeper."

"You said, 'the hive which helps in securing bees,' etc. What is needed besides the hive?"

"Good management is needed, and this is much above the hive. The early management of any hive consists in knowing that the bees have a good queen, plenty of stores, and that they are tucked up warm and secure at the top of the hive."

"But I have heard of bees doing well in hives with holes and cracks in them."

"Yes, bees will build up, even if the top of the hive has cracks in it; but if you will stop to think a minute you will see that the heat which passes out at these cracks takes just so much warmth away from the cluster, and causes the bees to burn just so much more fuel, which in this case is honey, to keep up the required heat necessary to raise brood, which many experiments show is from 94 to 98°. Therefore it pays well to see that the top of the hive is tight in early spring."

"Why is it necessary to have plenty of stores, or food, as you spoke about? If you kept them from starving is not that all that would be required?"

"Plenty of stores are needed; for if the bees

have to scrimp on account of fears of starvation, not nearly as much brood will be raised as there would be were there so much honey in the hives that the bees could use it lavishly. A hive which has twenty pounds of honey in it on the first day of April will, as a rule, give from one-third to double the bees at the commencement of the clover harvest that the one will which has only from three to five pounds, providing the latter does not starve altogether."

"Well, what about the good queen you spoke of?"

"A good queen is an actual necessity; for, tuck up the hive as well as we may, and give the bees any quantity of stores, yet if the queen is a poor or a failing one there will be only enough bees raised to keep up the dying population of the hive, resulting in little or no honey to the owner."

"What more will the farmer need?"

"Seeing that the bees have the three requisites spoken of, little more will be needed from the farmer till swarming time arrives. When the first swarm issues you will mark the date on the hive so, that on the eighth day you can go in the evening and listen for the piping of the first young queen, which usually hatches some time during the seventh day, where the swarm issued on the sealing of the first queen-cell, as it generally does."

"What do you mean by piping?"

"When the bees desire to send out an after-swarm they cluster about all the queen-cells in the hive, so that the first hatched queen can not get at them to destroy them. This seems to enrage the queen that is out of her cell, and she utters some shrill notes, sounding like teet, teet, teet, several being uttered in quick succession, which is easily distinguished from all other noises in or about the hive."

"When this is heard, what then?"

"If you hear the queen piping you may know that if the weather is pleasant a second swarm will issue the next day, unless thwarted in some way, and also that there is a young queen out of her cell and at liberty in the hive. If this piping is heard, the hive should be opened early the next morning, and every queen-cell cut off, which will prevent any after-swarms issuing from that hive."

"Is it easy to find these queen-cells?"

"Yes, fairly so; but to be sure that none are missed by being covered by the bees, it is well to shake the bees off each frame, shaking them in front of the entrance so that they can run into the hive again."

"When should I put on the honey-boxes?"

"The surplus arrangement should be put on each hive that has its combs filled with brood, as soon as the honey harvest commences, no matter whether the bees have swarmed or not; and upon all others as soon as there are bees enough in them so that they can keep up the necessary warmth for brood-rearing with the surplus arrangement on."

"How about taking off the honey?"

"As soon as many of the sections are filled they should be taken off while snow-white, as the appearance of the honey in market has

much to do with the price we receive for it. But I have an engagement to meet at our village an hour from now, so I can not talk any longer, if I get there on time. But one word more before I go: No one should think of keeping bees without some one of the many good bee-books of the present. One of these will tell you all about hives, and the management of bees, much better than I can were I to talk with you two days. Get one of Root's A B C books and see if I have not told you right."



A SHORT-TUBE CLOVER IN SIGHT; HOW THE BEES WORKED ON IT.

I am very much interested in the effort you are making for long-tongued bees and short-tubed clover. I for one believe that the goal can be reached from both directions; i. e., by combining the two. In 1898 I noticed my bees going and coming in one direction, namely, southwest. Thinking to find what they were working on I followed in that direction, and found very few bees at work on or near the ground, and no timber of any consequence on which they could work. About a mile and a half from home I found a clover-field fairly swarming with bees, while a clover-field of 30 or more acres with one side of it, not 50 yards from a part, and not more than 40 feet from the remainder of my lot of 30 hives, had very few bees on it. Some two or three days after, I noticed the bees stopping work about noon, and taking my wheel I rode around and found my clover-field laid low. When the second crop came in bloom I again noticed the bees in particular, and found them working on this same field, although the field across the road from my home contained many more bees than on the first crop. This fact alone caused me to decide that I wanted seed from that particular field. When the neighbor hulled his seed, by offering a few cents above the market price I obtained it, but had to take the entire crop to get any. I managed to sell some of it to some of my neighbors, and some more to my father, who lives some ten miles southwest of me.

The crop of seed sown near me in 1899 was almost a failure in catching, and what did catch was winter-killed last winter, while some fair fields were left over at my father's.

My prospects for honey last spring were any thing, but bright for 30 colonies, so I decided to divide up territory. I took five of my weaker colonies and one strong one to my father's; 4 were taken to a place where there were a fair number of basswood-trees, although badly cut by the canker-worm. Well, this fall I had 24 colonies to feed, nearly all being at starvation's door.

My father said when he cut his hay he never saw bees thicker on a buckwheat-patch than on his clover. I made a trip to see how they

were doing, and had the pleasure (?) of helping him haul up his hay; but when that clover-field bloomed for seed, those bees filled up every thing tight; and I was surprised, on going down one day, to find them so. Now, I feel that *that* clover had something to do with it. But the weakest colony taken down there built up the strongest, yet could not have been fuller of honey than the other five.

J. WARREN ARTHUR.

Beatty, O., Nov. 12.

[It would appear that the clover on which your bees worked so during the summer of 1898 was of the short-tube variety, because you say that there was another field near by of another clover which the bees would hardly notice. If your father still has some of that seed we should like to get some of it. What you or your father can spare of it would probably be taken off your hands by bee-keepers. I don't object to giving a free advertisement to any one responsible and honest, who has a short-tubed clover. We are fast getting the bees with long tongues; now let us reach for the short-tubed red clover.—ED.]

CLIPPING BY HOLDING ONE WING.

Friend Root:—There have been so many queen-clipping methods given, and all the best, that I am disposed to give mine, which I have practiced for 16 years and never injured a queen yet. When the comb is found containing the queen, I take hold of the center of the top-bar with the right hand, so as to turn from side to side readily, as is often necessary, and with the thumb and fore finger of the left hand I catch her by one wing and place the comb in the hive, or set it by the side of the hive. Then with a pair of old shears of small size, worn down to slim points, I clip the loose wings, and she is placed on top of frames, without injury. I would not dare to catch her by the thorax with the wire fork, nor even my fingers, for fear of injuring her, which could be very easily done, as it does not require very much pressure to do so; and unless one's nerves were *very* steady there would be danger of pulling a wing off with a dull knife. I do all my clipping as soon as the weather is settled in the spring, and carry the shears with me for this purpose; and when my yard is gone over, all queens of past year's rearing are clipped, hence it is not necessary to carry shears all summer or do the jack-knife act either. There have been complaints in the past of the queen cramping when held by the wing; but I would pay a dollar to see one.

Hillsboro, Wis.

ELIAS FOX.

[There would be more danger of maiming a queen, from my point of view, by catching her by one set of wings—much more so than to catch her by *both* wings, and then hold her by the thorax. It would take quite a strong pressure at this point to do the queen injury. Try the Miller plan outlined on page 838, Nov. 1, and you will be convinced that it is not so bad as you think. I have tried catching queens by one set of wings, and invariably she would, with her strong legs, tug and twist un-

til something had to let go—either my fingers or the wings at the sockets.—ED.]

HOW MANY POUNDS OF HONEY DOES IT TAKE TO MAKE A POUND OF WAX?

This is an old question that every now and then bobs up in a new phase, as in the experiments reported by Dr. Miller in one of his *Straws*, Nov. 15, made by editor Pender. I think the conclusions from this experiment faulty and unreliable. It is generally agreed that wax is a natural secretion of the bees, produced by the digestion of the food they consume, somewhat similar to the way that the fat that lines the kidneys of a pig is produced by the food consumed and digested. Bees may have the power to regulate the quantity of wax necessary for them to produce; but we don't know this, and perhaps never will. But their instinct would certainly lead them to consume the food necessary to produce wax whenever it was likely and imminent that wax would be needed, as in the case of swarming out to make a new home. There is no doubt in my mind that the bees consume an extra quantity of honey in the old hive just before they leave it, for the very purpose of secreting wax, and that they have a supply of wax already accumulated on their bodies before they leave the old hive for a new home.

If this is correct, it is very fallacious to estimate the amount of honey required to make a pound of wax, simply by the amount of honey the swarm carried away from the old hive in their honey-pouches, in comparison with the weight of the new comb they build before going out after more food. Just as well take a pig that has been well kept, and make it fast for a few days, and then feed it a certain amount of corn, and weigh its kidney fat to find how many pounds of corn it takes to make a pound of lard.

More reliable experiments than this must be made before it is proven that it requires only four pounds of honey to make one of wax.

THADDEUS SMITH.

Pelee Island, Ontario, Nov. 24.

[This is a matter that I wish our experiment stations might take up. Prof. Gillette, of the Colorado Experiment Station, who has done such good work in testing foundation, perhaps may see his way clear to take up this line of work.—ED.]

FLAT CANS FOR CARRYING SYRUP TO OUT-APPIARIES.

Friend Root:—You ask, in your Oct. 15th issue, why I use a flat shallow can for carrying sugar syrup to out-yards. Why, the best reason in the world, as I think. Because a flat can will ride so much better in a three-spring wagon. A tall can carried over some of the steep and rough roads I have to carry syrup over would be in danger of tipping over, or at any rate keep me in a constant worry for fear of its getting upset.

In feeding some 500 or 600 pounds of sugar last year I do not know that I lost a pound by granulation where vinegar was used in suffi-

cient quantity ; but it must be strong vinegar. This year I have used much more than one tablespoonful of vinegar to ten pounds of sugar. I have no water near any of my out-yards, and I have thought it a great saving of time to take my syrup from home. Where many thousands of pounds of syrup are to be fed I have thought the more condensed the greater the saving of time. But you speak so highly of feeding syrup half sugar and half water that I propose to try it when I need to feed next time.

J. E. CRANE.

Middlebury, Vt., Oct. 24.

[If you make your syrup by the cold process—mixing sugar and water in an ordinary extractor-can at the out-yard, you don't need to haul the sugar and water mixed (syrup) but just carry the sugar alone. Arriving at the out-yard, pour the sugar into a common honey-extractor, add water equal bulk, and turn the extractor-handle till sugar dissolves. You see there is no need to haul water from home to the out yards.—ED.]



Now will be a good time to renail hives that may be gaping in the corners, and to put on an additional coat of paint.

WHILE this journal is going out to its readers I expect to be in attendance at bee-keepers' institutes in Central New York.

THIS number contains 16 extra pages. During the current year we have given our readers about 1000 pages for \$1.00. There may be better investments, but certainly this is a good one.

THERE never was a time, I believe, when there was such a scarcity of good honey as there has been this fall. There has been quite an upward tendency in the price of comb and extracted. These prices ought not to be lower, even with a good crop, for good honey ought to be worth the prices now asked in the market.

I HOPE those who are in position to do so will make close observations on the matter of sealed covers and absorbents for outdoor wintering. Some winters the latter seem to give the best result, and others the former. Let us discover, if possible, what the exact conditions are under which one or the other gives the best wintering.

THE index for 1900, in this issue, is unusually full and complete. Stenog and I have been working on it long and hard, and we believe that now we have made the best index that we have ever placed before our readers. But an index is of no value unless one keeps his back numbers, and no progressive bee-keeper can afford not to do it.

WHEN putting bees in the cellar, be sure to give them plenty of bottom ventilation, either by taking the bottom-board off entirely or giving the bees an entrance an inch or two deep and the width of the hive. The wide and deep entrances outdoors should be contracted down to $\frac{3}{8}$ inch by 8 wide. If the colony is not strong, $5 \times \frac{3}{8}$ will be better.

HERE we are, Bro. Hutchinson and I, at Hotel Broezel, Buffalo, N. Y., writing editorials for our respective journals. We have just come from the Ontario convention over in Canada, and to-morrow will work eastward—Bro. Hutchinson to the bee-keepers' institutes, and I to one or two of the institutes, and to the trial of the Utter Bros. in the now celebrated bee-and-fruit case.

PROSPECTS FOR A GOOD HONEY-FLOW IN CALIFORNIA.

THE Union Hive and Box Co., Los Angeles, writes that California has had the finest rain-storm in years ; that it was general, and lasted nearly a week. From five to ten inches fell, seven being about the average. This is more than the entire season for two years past. They say if this is followed by any thing at all it means a good honey season. The amount of precipitation in the Northern States has also been unusually heavy this fall, so that we are hopeful all along the line.

BOTTLING HONEY.

IN this issue we begin our series of articles on bottling honey. I should like to have our friends go into this subject so fully that every thing of value pertaining to it may be picked up. A knowledge of how to increase the price of extracted honey may be worth hundreds of dollars to bee-keepers. But this knowledge will avail them nothing unless an effort is made to develop the *home* market. These short winter days, when work is not very rushing on the farm, will afford a good opportunity to experiment in bottling, and to try the product on the local markets.

"KELLOGG'S PURE HONEY."

OUR readers will remember that a certain brand of honey, labeled "Kellogg's Pure White Clover Honey," bearing the address Medina, O., has been sold considerably in the South and West. Several analyses have shown that it is greatly adulterated. Of course, it is plain that the venders of this stuff are trying to palm it off under the reputation of The A. I. Root Co., who do a large business in selling pure honey. We have been, for about a year, gathering facts and affidavits, and now our attorney has the matter in hand. We do not need to tell our readers that no one in this small town is putting up bogus honey. If such were the case we should know it right speedily ; and yet we are told that the venders of this so-called Kellogg's pure honey have been telling their customers right and left that these goods were put up by a large firm in Medina, O. The gall of some people is exceeded only by their greed for the almighty dollar.

DENVER TURNED DOWN BY THE RAILROAD COMPANIES.

IT looks now as if the railroad companies had turned down Denver in that they have refused to accept the proposition of the G. A. R. people to hold their encampment in that city providing that a certain rate could be secured. I notice that a very strong effort is being made to pull it to Cleveland. This matter would be of no particular interest to bee-keepers except that the National Bee keepers' Association has a custom of holding its meetings at the same time and place as the G. A. R. The matter rests with the Executive Board, and announcements will be made, probably, as soon as the G. A. R. decides definitely where it will meet. But even then it is not absolutely a foregone conclusion that the National will meet at the same time and place.

DOES SLOW COOLING LIGHTEN THE COLOR OF WAX?

THERE has been a little controversy between the editor of the *American Bee-keeper* and the editor of the *American Bee Journal*, on the question as to whether slow cooling of melted wax will make a dull-colored article a bright yellow. Without desiring to mix up in the fray I will simply say that I rather take the position of Mr. Hill. Slow cooling can have no other effect than to allow certain particles of dirt to settle; and after these are separated out, the difference in color of the wax will be too slight to cut much of a figure. The only way I know of to make a dull-colored or dark-colored wax yellow is to use a little sulphuric acid—a very little—when the color will be brought to a bright lemon yellow. We render anywhere from forty to fifty tons every season. And we rely on the acid almost exclusively to get the color.

THE ONTARIO CONVENTION AND THE BANQUET.

THE Ontario Bee-keepers' Convention of Canada was held at Niagara Falls, as scheduled. While the attendance was not as large as usual, owing, probably, to the poor season, the spirit of the meeting and the character of the discussions were of the best. At the close of the stereopticon work on the evening of the second day, a banquet in honor of the ex-presidents of the Association was held at Hotel Savoy. We sat down to the board at about 10 P. M. After we had partaken of the things that delight the inner man the tables were cleared, and then began the feast that feeds the intellectual man. We drank (water) to the health of "our good Queen," and then all joined in the familiar song of "God Save the Queen." The first toast was offered by President Newton. This was followed by one to the Americans, by W. F. McKnight. It gave him pleasure, he said, to see the increasing attachment between the two great nations, England and America. He spoke feelingly of the Union Jack and of the Stars and Stripes, and he hoped that the day would soon come when they would float side by side, and would kiss each other in each other's fond embrace. He

was greeted by frequent rounds of applause, both during and at the close of his eloquent speech. Responses were then called for from the two Americans who were present—Mr W. L. Cogshall and E. R. Root. These were offered, and then we drank to the health of the ex-presidents, of whom a large number were present. Another national anthem was sung, after which we listened to some delightful speeches from the aforesaid ex-presidents.

The theme of the evening, started by Mr. McKnight, of "England and America," seemed to run all through the speeches, although there was occasional reference to the effect that the English flag should be "on top." We listened to an eloquent speech from the mayor, who was an honored guest, and to members of the press. The meeting finally broke up at 2 o'clock in the morning, after a most delightful evening of speech and song.

I shall endeavor to give other snap shots of the convention from time to time.

A VISIT FROM F. E. BROWN, OF CALIFORNIA; AN UNCAPPING-MACHINE.

LAST week we were favored with a short call from Mr. F. E. Brown, of Hanford, Cal. Mr. Brown is secretary of the Central California Bee-keepers' Association, and is manager of some 700 colonies, of which number he owns 150. He has had a very large experience in extracting honey, and during his short stay here he gave us a number of pointers on extractors and uncapping-cans. He said that the thing we needed now is a good uncapping-machine; that if we had that, it would pay to run extractors by some sort of motor. He was much pleased when I told him that we had such a machine, and had sent it to Colorado to be tested, and that, if the same proved to be satisfactory, we would put it on the market. But of this, details will be given later.

Mr. Brown prefers an uncapping-box to an uncapping-can. It should be made of wood, he thinks, so that the uncapping-knife can be cleaned by scraping on the wood next to the box. A metal can or box is objectionable on this account. He preferred to have the box oblong so that combs, as fast as they are uncapped, can be stood on end at one end of the box, ready for the extractor. Combs that have been uncapped must either go directly into the extractor or into some receptacle to catch the drip, and he knew of nothing better than the uncapping-box itself.

Perhaps I might state that the uncapping-machine that we are testing is the invention of Arthur C. Miller, of Providence, R. I., who is also the inventor of the first practical hot-plate foundation-fastener. He has tested the uncapper carefully, and is very much pleased with its workings. The machine is now in the hands of R. C. Aikin, president of the Colorado State Bee-keepers' Association, and who is also a vice-president of the National Bee-keepers' Association. Mr. Aikin has very thick honey, and does a large extracting business. If the machine will work satisfactorily for him under his exacting conditions it will work anywhere.



Go ye, therefore, and teach all nations.—MATT. 28:19.

When Jesus laid this injunction on his followers, very likely it did not occur to them then that, instead of going all over the world, away across the seas, and to the remote islands, in due time all nations should come to us instead of our going to them; and I am afraid that a host of Christ's followers at this present day hardly realize or comprehend that mission work means doing missionary work among people here at *home*, that God in his infinite wisdom has sent to us. I fear we are all apt to have more enthusiasm for going across the seas and in fitting out missionaries than we have for starting missionary work among our next-door neighbors; nay, further still, for starting and carrying on missionary work right among those under our own roof, the inmates of our own households, and, I should like to say, among those who sit with us at our own tables. But I am going to touch on this matter of who shall sit down at the table with us at our daily meals, further on.

I have already told you that one of the children God sent to our home, the one we used to call Blue Eyes, was a natural teacher. In her childhood she gathered the neighbors' children about her and "taught school." When she was old enough she served an apprenticeship, if that is the way to term it, under that grand good woman who has charge of our Medina primary department, Miss Sarah Smith. Some of you have read her writings. Well, Constance declared for several years that teaching was to be her lifework; and after she became a follower of Christ Jesus she felt so sure she was called into the work of foreign missions that she made arrangements to take a course in college with that end in view. Man proposes, but God disposes; and instead of going to Africa or some other foreign land she is now heart and soul devoted to leading and directing the mind and body of her own little Prattler, her own boy. I hope and pray, however, that this boy is not going to take all of her zeal and energy. I said God disposed things in such a way that she did not go to Africa; but the great Father was planning, and is planning in your life and mine, dear reader, to give us an opportunity to use all our powers and strength for his honor and glory.

Here in Medina we have had to meet the problem, as they do all over the world, or at least almost all over the world, in getting help for the women-folks in the home, as well as help for the men-folks on the farms and in the factories. There is a peculiar difficulty, however, in getting help for the mother—getting help to work *with* the mother right by her side, doing the very tasks that she does herself. There are plenty of girls to work in factories; plenty to work in stores; plenty for the offices. In a recent number of the

Country Gentleman a pitiful story was told about the girls in the great city of New York, who are working—yes, thousands of them—in offices, and especially typewriters, for just enough to pay their board—no more. This article suggested that, when these girls complain to their employers that they can not keep soul and body together on such small pay, the employers have heartlessly hinted that the girls must—well, let us say barter away their good looks or their youth for the wherewith to dress decently and find lodgings. The article was a vehement protest against the heartlessness and cruelty of the average business man in all the great cities. Yes, there is complaint right here in Medina that the dry-goods men pay their women clerks barely enough to enable them to pay for decent board and lodgings.

Now, it rejoiced my heart to see a footnote at the end of the article, by the editor of the *Country Gentleman*, suggesting that these girls could get places, every one of them, where they would be furnished both board and lodging, and two or three dollars a week pay besides, for helping the tired mothers in our homes, but they will not do it; yes, it rejoiced my heart to see the editor make a vigorous and vehement strike just where my mind was running as I read the article.

Now, then, friends, who is at fault? Is it altogether the fault of the girls? The mothers that need help are, a great part of them, professed followers of Christ Jesus. May God be praised that, during the years past since I have been permitted to write these Home Papers, I have had an insight into hundreds of homes; and I have become acquainted by correspondence with many more Christian mothers, and I am afraid that these Christian mothers are, at least *somewhat*, at fault. Many of them, I know, are preaching the gospel to their hired help, and sometimes the hired help is not only ungrateful, but saucy and impudent. Yes, I know too, it is sometimes the other way. The hired help is a good many times a patient, professing Christian. God knows how I wish it were oftener the case; and sometimes this patient professing Christian is obliged to put up with proud, overbearing, aristocratic mistresses. I do not like that word "mistresses." It does not tell what I mean. I believe God intended, in this very domestic relation which we are discussing, that the mother of the home should come nearer the relation of teacher (as in our text), and that the hired girl should be, in one sense at least, a pupil. When the bargain is made between these two, it should be understood that the mother, as the owner and proprietor of the home, should direct; and that a young woman or girl, as an employee, should work according to directions; that she should be willing to do whatever her teacher asks her to do, cheerfully and willingly.

Well, this daughter of ours commenced her mission in married life with a hired girl—at least I hope it was as I have stated it. One of the first things she undertook to do was to teach the girl not to waste the food left over from one meal to another. This she learned

from her mother. And let me say right here that, through all of our married life, there has been scarcely enough wasted in our kitchen to be worth carrying to the chickens, to say nothing about the pigs. When Mrs. Root and I commenced life together we got our start by saving what many people throw away. She has learned to cook so there is almost nothing wasted; and now while we two are alone she manages so nicely that, while we both have enough of every thing we want, there is scarcely a crumb left to be given to the chickens—nothing whatever for the slop-pail.

Well, one of this daughter's first experiences was in having every thing shoveled into the slop-pail just as soon as the family were fairly away from the table. Then if she did not keep an eye almost constantly on the girl the contents of the dish-pan would go into the kitchen sink—at least every thing she could get to run into it. Even after it had been explained to her that the waste-pipes would be clogged by such a course as that, and that an expensive job of tearing up the pipes would follow, she did not seem to care much about it. By patient care and kind teaching this difficulty was mostly got over unless the girl "got mad." When she got her temper up she would begin venting her spite by dumping every thing, not excepting pie and cake, into the slop-pail.* I presume she had learned that this provoked her mistress more than almost any thing else, or came the closest to upsetting her Christian spirit. Do you say you would not have such a girl on the premises an hour? Oh! yes, you would, I think, or at least I hope you would. The girl had some very commendable traits. She was an excellent cook, nice-looking, and well-behaved (when her temper did not get the better of her). Shall I tell you what provoked her most? It was having company come so that her work would be a little harder. By the way, I am told it is getting to be quite a fashion for hired girls to demand that their employers shall not entertain company—not even their own relatives. When Mrs. Root and I visited the Hilberts recently, they tried in vain to get a hired girl. In fact, they engaged two different ones; but when they found there were to be guests there from Ohio, the girls both—and I do not know but I might as well say all—refused to come. So Mrs. Hilbert and Mrs. Root had to be hired girls themselves; and with the amount of fun they had when they were at it, I do not know but they

enjoyed it more than if the girls had come. I think their husbands did, any way.

Well, dear friends, my story is getting to be a long one, and I have not yet reached its commencement. After the good women of Medina had had just such troubles as I have been telling you of (and some of them a good deal worse), they finally decided to send to some sort of an agency in the South for colored girls. First came three or four, then half a dozen, and I do not know but there are now two dozen all together here in Medina. Now, I am not going to put in a big plea for the colored race as helpers—not just yet, any way. While they have excellent constitutions, plenty of physical strength, and to a certain extent a high degree of docility and good nature, they are not just yet exactly what we want. A colored girl, only 17 years old, is now helping Mrs. Boyden; and I hope I am telling the truth when I say that Mrs. Boyden is helping this colored girl to be not only a *woman* but a follower of Christ Jesus; but her task is not altogether an easy one. I have heard people say that you must be careful how you make too much of the colored people, especially the younger ones, and I have learned some lessons along that line. When I look at them, and study the peculiarities of their race, and their general make-up, my heart is warmed toward them; but when I am told that, very soon after such a girl comes into the house (or at least it is the case with *some* of them), you must put a lock and key on every thing in the shape of eatables that you are not ready to give away, my heart rises up in rebellion. While I was in the South I was told repeatedly that these people steal, and tell lies about it, to such an extent that nobody expects any thing different. I thought it could not be true; but I have been forced to admit that these girls are bringing at least a little of this fashion into the North. Worse still, many of them do not seem to think that such conduct is inconsistent with a profession of religion or a member of the church. May God help us, and may he help them. When the matter is submitted to me, over and over again I have to say, "Lord, help me to realize and to remember that Jesus died for them, every one of them; and for this reason, if for no other, help me to be wise and careful and patient."

Dear friends, when we are moved by the missionary spirit, and think that God is calling us to foreign lands, shall we not remember that Africa is here? Yes, in one sense it is here in America, to our sorrow; and yet you know we have his precious promise that even the wrath of man shall be made to praise him.

Well, now, friends, if I should stop right here my conscience would trouble me for fear I have been a little too hard on the colored people; and therefore I shall take pleasure in calling your attention to something bright—yes, bright and glorious—opening up for them and for ourselves as well—at least I hope so.

Some time ago somebody away off across the water (I think it must have been a missionary, but I can not remember just now), asked us to procure for him a book called

* Some of you may, perhaps, think I am making a big fuss about a small matter; and I am free to confess I had not thought so much about the waste of food I have alluded to until we had these reports from starving India. Read the letter on page 586, and then think of the life and strength and relief from the awful agony of starvation that might be saved if this one avenue of waste that is going on in the United States could be stopped. I should hardly dare to suggest that the nice and expensive food thrown away in America would feed starving India; but when we consider what a very small amount of nourishing food can be made to keep one alive, such an estimate may not be so far out of the way after all. In our large cities it has become a great problem how to dispose of the slops and sewage; and yet a great part of this tremendous bulk is made up of wholesome food.]

"Tuskegee, its Story and its Work," by Max Bennett Thrasher. Somehow or other I caught a glimpse of the letter, and I told the clerk while she was ordering the book to get one for me too, for I knew the book was a history of a wonderful work performed by Booker T. Washington, in Tuskegee, Ala. When the book was laid on my table I had forgotten all about ordering it; and it was not only one of my happy surprises, but a wonderful surprise. How I do wish you could all look at the pictures and read the book! I will straightway write to the publishers, and see what arrangements I can make to have them furnish it to you at a very low price. It was published during the current year. It has 204 pages and a large number of fine half-tone engravings printed on beautiful paper, and excellent print.

Booker T. Washington is a full-blooded negro, if I am correct. Nobody knows exactly when he was born; for, at that time, the birth of another black baby was of too little consequence to be recorded anywhere. Even when a small boy he showed a hungering and thirsting for education. I might almost say no boy ever had greater difficulties about him than this one in satisfying his thirst for knowledge. But he conquered; and even in his youth he planned not only to help himself but to help his race. As I am looking forward with pleasure to a visit to this great industrial home during the coming winter I will go very briefly over the subject just now. Whatever he learned just fired him with enthusiasm to teach the same to others of his race; and while yet quite a boy he gathered a number of others who were willing to spend their lives in toil for their race, and they together started a school. They were without money, without friends, and without influence. But they had determination and the average African constitution and muscle. They put up their own buildings, first of logs, then of boards, and, as the work went on, they made brick and erected brick buildings. In some respects this work at Tuskegee is an experiment station. Some of the students take to agriculture, some to mechanics, some to machinery; and not only are they carrying on almost all trades and industries, but they have also professors in the different sciences little if any behind those that we find among the white people.

I hardly need tell you that the founder and leader is a most sincere and devoted Christian.

Very early in the work a beautiful chapel was built of brick; then a building they call Science Hall; then a department for dairy work, with students being taught exactly as we teach at the institute at Columbus, O., and in other States. Somebody has said the remarkable thing about Mr. Washington's work is that his graduates are all just so many Booker T. Washingtons on a smaller scale. And our young friend did not forget the colored girls by any means. Mrs. Booker T. Washington is a handsome colored woman, although a full-blooded black, like her husband—that is, if I am right about it, and she is doing for the women exactly what he is doing for the

men. What a transformation! When I look at the colored girls here in Medina (and I have reason to believe, too, that they are far above thousands upon thousands in the far South), and then glance at the pictures of the neatly dressed and lady-like girls pictured in the book, I exclaim again and again, "May God be praised!" The institution now owns 2500 acres—that is, they are making use of more or less of that amount of land; and as a recognition of the services that this devoted man and his followers are doing for the whole United States, and I might as well say for the whole wide world, the government of the United States has donated some 25,000 acres. This he is to use, or the proceeds from it, as he chooses or thinks best.

Dear friends, I am almost afraid that our nation and the whole wide world are just now showing their gratitude by almost *too much* praise. Can this poor colored friend of ours, who has been so suddenly raised from abject poverty and want—can he and his followers stand all of this prosperity? Let us remember him in our prayers. I believe most of the colored people know something of this man and of this institution; and it would certainly be doing missionary work to put this book in the hands of every colored boy and girl. They ought to know the possibilities of the colored race. Sometimes I almost fear that hope has died out in their hearts when they realize that many of them, and especially the young girls, can hardly expect protection from the laws of our land. Thank God, however, that just recently our people are waking up to the importance of protecting our colored girls from the schemes of evil men as well as the white ones. Now, I wish you would all get this book and read it. It is as interesting as Robinson Crusoe (pardon me for the illustration), but it is every word true. Anybody is at liberty to visit the grounds and schools, and see for himself. Many of you have heard Mr. Washington speak, for he is a great orator as well as a wonderful writer. May God help us all to do our part in the glad work of preaching the gospel to every human being; and may he help me to preach the gospel of Christ Jesus to those under my own roof in my own home.

I presume the readers of GLEANINGS will be particularly interested in the department of bee culture; in fact, we have a beautiful photo, in the book, of the apiary, showing quite a plant of Dovetailed hives that came from our own establishment. Now, who do you suppose it is who is learning bee culture? Why, instead of colored boys it is the colored girls. As nearly as I can make out, Mrs. Booker T. Washington herself is the instructor, for I notice she is appointed directress of domestic industries for girls. I never thought of it before, but I do not see why colored girls should not become expert in this line. It is just as natural for them to be in the open air as it is for the bees themselves; and I notice by the photo that the greater part of them are bareheaded, not having on even a veil. I notice, however, they have smokers. Now, that is just according to my idea. Give me a cold-blast smoker, and I do not believe I

should bother with a veil — at least not many days in the year. I am going to try to get this picture to show to you in GLEANINGS.

One of the difficulties with the girls in regard to helping in the home is the matter of its not being as respectable as some other callings; and much of it hinges on the fact that the hired girl seldom sits down at the table with the family. Out in the country, on the farms, the hired men usually sit down with the rest, even if company is present. As somebody must wait on the table — at least where there is a large gathering — the hired girl often waits on the guests. Now, I am just old-fashioned enough to want to see everybody in the house sit down when I do. Bring the food all to the table in the old-fashioned way, and then let us all sit down, ask a blessing, and have a merry time by *waiting on each other*. Pass the things around. May be I am old-fashioned, and may be I am mistaken; but I would have the colored girl and the colored man take their food with the rest of the household. If they are uncouth in manners and dress, fix the manners and dress, and *lift up* Africa, and every other nation in the same way. Yes, I would have the Chinaman and the Japanese too at my table if they helped me on my farm or in my own home; and I think this thing alone would make an American of either, *quicker* than any thing else. I may not, during my life at least, be able to make the black man's skin white; but if we should succeed, through Christ Jesus, in making his heart as pure and clean, say, as Booker Washington's, what would it *matter* about the color of his skin? Yes, and I would have the American Indians eat at my table too. There are quite a number of them up in the Traverse region, and I confess I have watched them many times while my heart felt drawn toward them. May God help us in our efforts to bring forward that glad time when *all* kindreds and *all* nations shall sit down together, forgetting color and nationality, at the feet of "the Son of God who taketh away the sin of the world."

a corn-marker to be drawn by two horses. This marker has three runners. After describing the corn-marker they explain and illustrate the chain arrangement as follows:



For cross-marking, employ the chain marker, shown in the cut. It consists of a light pole, with trace-chains suspended from it, at distances for each row, or 3 or $\frac{3}{4}$ feet apart, as may be desired. Two men take the pole near each end, and one of them, acting as guide, and ranging accurately, they walk forward, dragging the chains in the soil, making a fine smooth line for each chain. The figure represents only five chains. Six or seven may be employed without inconvenience, and the field marked off with great rapidity. By the first of these implements, a man and team will mark more than an acre; and by the use of the second, two men, or a man and boy, will mark $2\frac{1}{2}$ acres in walking a mile.

In order to make the machine lighter for the men to carry, I would suggest using cords with half a dozen or a dozen links of chain at the end of the cord. The chain must be large enough, and there must be links enough, so that their weight will sink them into the soil sufficiently to have them pull a straight line. My impression is, the ground should be harrowed and floated until it is comparatively smooth. Here in Medina we use a roller just before marking. In the Traverse region I believe rollers are not very much used. The difference, probably, is on account of the soil. There are not many lumps to mash up, but there are cavities to fill. The ground should be made as smooth and level as possible by whatever means you find most convenient. If you wish to cultivate your crop both ways, then you will need to mark and cross-mark. I would suggest having the cross-marking nearer together; and I am pretty well satisfied that many times, where potatoes are cultivated both ways, the hills are so far apart the potatoes not only grow too large, especially the Rurals and Carmans, but average good land would stand having the potatoes enough nearer to give half as many more bushels to the acre. All potatoes that are in the habit of growing too large for nice cooking size should be planted closer until the size is reduced; and on our soil I have many times thought there was a positive gain in having potatoes so close to each other that the foliage soon covers the ground and keeps off the hot sun. Of course, to do this you must use manure or turn under heavy crops of clover, or, better still, turn under clover in the fall and sow it to rye, and then turn under the rye in June, and plant your potatoes.

Permit me to say again that this chain method of marking must be cheaper than marking with a horse, besides avoiding the tramping of the ground when it is in fine condition to receive the potatoes; and when used in connection with the hand potato-planter we shall picture and describe later on, it is certainly the plan. I was talking with a boy of eighteen in regard to this method of marking and plant-



MARKING OUT POTATO GROUND BY MEN IN-STEAD OF HORSES; MORE ABOUT IT.

When I described the method used in the Traverse region, on page 807, Oct. 15, I said if any of our agricultural papers had ever described this method I should be glad to know it. Well, I am glad to be able to tell you that one agricultural periodical *did* describe and give a picture of the operation as long ago as 1864. It appeared then in that old standard periodical, the *Cultivator and Country Gentleman*, and is now figured in their "Annual Register of Rural Affairs," page 34. They have kindly permitted us to use the cut, which we take pleasure in giving above. Permit me to explain that they gave at the same time a cut of

ing, and he seemed surprised. "Why, Mr. Root, this is the only way of marking and planting potatoes I ever saw or *heard of*. How do you mark them and plant them down in Ohio?"

I mention this to show how widespread is the custom in that great potato region in Northern Michigan.

In regard to the method of friend Hilbert, of Bingham, Mich., in getting his heavy crops of clover where seed is sown in August among corn or buckwheat, he uses about 12 lbs. of seed to the acre, as nearly as he can make it. He uses a broadcast seed-sower, and goes through each row of corn. After that he cultivates both ways to cover the seed. I was through his cornfields just as the seed was coming up. He secures a very even and pretty stand; and when I last saw his clover, near the first of November, it looked so handsome I was not surprised that it wintered over all right. He put clover seed in the same way among all his buckwheat; and after the buckwheat was cut and taken off the ground, the clover looked even handsomer than it did in the corn. In fact, Mr. Hilbert's whole farm is green all winter long, either with clover or rye.

THE PEACH-LEAF CURL; ITS NATURE AND TREATMENT.

This is the title of a beautiful new book just published by the Department of Agriculture, Washington; octavo size, over 200 pages, printed on beautiful paper, illustrated with fine plates. Some time ago somebody told me the curl was probably caused by cold weather in the spring, and probably did not hurt the tree very much. I thought this was a mistake. Our scientific men have now, after persistent study, decided that it is a parasitic fungus; and that it is now causing a loss of probably not less than *three millions of dollars annually*. It has at the present time a worldwide distribution. Rains and cold weather tend to increase the severity of the trouble, but are not at the bottom of it. Orchards near large bodies of water, and in low damp situations, are more subject to curl than those in dry elevated situations. I presume this is one reason why peaches do so much better on the very tops of our highest hills.

The curl was first treated in California successfully as long ago as 1880 to 1885. Copper sprays were the most successful, although there are many other substitutes used. A Bordeaux mixture consisting of 5 lbs. of copper sulphate and 5 lbs. of lime poured into 45 gallons of water gives the best results. Over 1000 per cent gain in the fruit set has resulted from the use of some of the more effective sprays. The trees should be sprayed each season, even if they are not expected to bear, as the loss of a crop of leaves is shown to result in as great a drain on the trees as does the maturing of one-half to two-thirds of a crop of fruit. Cyclone nozzles with lateral or diagonal discharge are best adapted to the work. Winter spraying does very well, but spraying seems to do most good if applied from three to four weeks before the opening of the blossoms. The best

time is during calm dry weather, during the middle of the day, in order to avoid dew or frost on the limbs as much as possible. Some of the choicest varieties, such as the Elberta and Lovell, are seriously affected; but many times a single treatment has entirely prevented the disease on these varieties. I think we may safely set it down that any thing that injures the foliage of any plant or vegetable, in any way, seriously interferes with the crop. Whether it is potatoes, peaches, or any thing else, take care of the foliage. Keep it bright, green, thrifty, and luxuriant. Protect it from insects, from fungus, and from blight, and you will be pretty sure of a crop. I can not determine whether this book is sent anywhere free of charge or not, but you can find out by addressing the Agricultural Department, Washington.

Permit me to say that the above remarks were taken mostly from the summary, and I do love to see a summary at the end of any bulletin. A great many times, when we can not take time to go over the facts and figures through the books, we can read the summary and get at the conclusions in a very few minutes.

SPRINGS—HOW TO CARE FOR THEM WHEN USED FOR WATERING STOCK; SOMETHING FROM THE DEPARTMENT OF AGRICULTURE, WASHINGTON.

I have before remarked, that all my life I have been interested in natural springs. When I was but little more than four years old I used to enjoy bringing spring water for my father when he was thirsty. In my travels I have frequently noticed how shiftlessly springs were cared for. For instance, the main source of that spring on my farm in the woods has been literally poached up by the cattle tramping in the ground when they went there to drink. Their droppings are mixed and poached up with the muck surrounding the spring, and my first job on my next visit will probably be to dig out that spring and wall it up and fence it up, and make it wholesome; and then I am going to fix, at my own expense, a nice drinking-place for the cattle, even if said cattle do belong to somebody else. I do this for the privilege of having pure water for my own use. Well, in answer to my inquiries, from the head of the government I received the following very valuable letter. See if you do not agree with me.

U. S. DEPT. OF AGRICULTURE,
OFFICE OF IRRIGATION INQUIRY, }
WASHINGTON, D. C. }

Mr. A. I. Root: — Regarding your question as to publications on how to open up springs and manage them so as to bring water into troughs where the stock can drink without contaminating it, I have to say, that, in the State where I live, that is the business very extensively gone into by the cattle and sheep men, and I think it might be well to give you a pretty full description of how the matter is managed and how the stock fare where it is not managed properly.

A stockman having what is called a range, which is a tract of land generally 40 or 50 miles in length by about 15 to 20 miles wide, upon which he attempts to keep his herd grazing by means of horsemen watching them, the springs are inclosed by fences strong and high enough to prevent the stock breaking them down. The spring is dug out clean, all the mud which usually collects about such an orifice being removed, and then is walled with stones, those most generally

used being lava rock or granite. The spring, being nicely walled, is covered over by slabs of stone, and upon them earth is placed. The water is led out from the spring, so arranged, by means of pipes, the usual gas-pipe, and carried far enough to reach outside the inclosure about the spring, where strong troughs are placed, raised about two feet above the ground, and they are arranged to be one foot wide and one foot in depth, and 12 to 16 feet long. These troughs are placed in rows in such a way that the excess of water from the upper trough, instead of overflowing, is carried to the next trough, and so on through the series. Finally the waste water is led away by means of a drain, which is usually paved with stone to prevent its becoming muddy.

I know of several cattle-ranges supplied in this way, and have been led to admire the fine condition of the stock upon them. On the other hand, those cattle-men who avoid the expenditure and labor necessary for putting their water supply in this condition are continually attacked by some form of blood-poisoning, the common form being anthrax. I have passed by the water-holes on some ranges, and found them tramped into a mass of mud several hundred feet across, and have counted as many as fifty head of cattle lying in the mud dead; the living ones obliged to drink the water from this mud and the carcasses. It is no uncommon thing to hear of a certain herd being attacked by anthrax, and almost wiped out of existence, and in every case it is where the water supply has not been properly attended to. Where it is known that the water below the surface will flow to the surface with sufficient force to form what is called an artesian well, and if the distance to the water is not very great, it is usual to drive a two or three inch gas-pipe down to the supply. In this way many cattle-ranches are furnished with good pure water, the pipes being three or four feet above the ground, continually flowing over into a series of troughs arranged to keep the ground about the pipe from becoming muddy. The ranch of the Hon. Theodore Winters, in Washoe Valley, Nevada, is a fine example. He keeps large amount of blooded stock, both horses and cattle. He has sunk at various points these wells, varying in depth from 150 to 350 feet, and thereby is brought to the surface a continual supply of water. The land where these wells are sunk is gravelly and sandy, and therefore never becomes muddy through the flow of water, and he does not make use of this trough system for that reason. I think that nowhere in Nevada or the West can be found a ranch so well supplied with good pure water for stock, and at the same time a more healthy herd of stock, horses, cattle, and sheep. There might be cases in which your spring water would need to be conveyed through a pipe to a water pool. This is a contrivance frequently made use of in the West, and works well. The prime condition to be attended to is to secure a clean orifice for the discharge of the spring water; and, if possible, to cover that over to avoid its contamination by dust from the atmosphere, dead leaves, and other sources of filth which will reach open wells, and the pool should be paved with stones.

I think if you have new ideas on the subject it would be well to publish a book, as you propose, and I should be very glad, in case you do, to be the recipient of a copy. I believe in furnishing thirsty humanity and thirsty animals with the proper kind of drink, by which I mean pure water, and to furnish it *ad libitum*. Very truly yours, CHAS. W. IRISH,

Chief of Irrigation Inquiry.

Permit me to add right here a hearty amen to the concluding sentence in the above very valuable letter.

SWEET CLOVER — ALL ABOUT IT IN A NUT-SHELL.

We clip the following from the *New England Cultivator*. It has more boiled-down truth in it than we have seen in a long time in regard to sweet clover :

A Missouri correspondent of the *Kansas Farmer* says of the Bokhara (or sweet) clover that he thinks it one of the best forage-plants for the arid regions of the Western States, and that cattle eat the hay in preference to any other. It will grow on soils where nothing else grows, and will soon make them fertile enough to grow other clover. It will kill out all weeds and small bushes, and take complete possession of the land; yet as it is a biennial it can not be-

come a pest if mown before it goes to seed, as it dies out root and branch in two years.

BELGIAN HARES BEFORE THE SECRETARY OF AGRICULTURE, WASHINGTON.

We clip the following from the report for 1900 :

Much interest in the Belgian hare has been developed during the last three years, especially in California, Colorado, and other Western States. But however valuable Belgian hares may be for meat or fur, their introduction in large numbers is accompanied by a certain element of danger which should not be overlooked. Some are sure to escape, and the State Board of Horticulture of California has estimated that several thousand of the animals are already at large in the State. If they increase as rapidly when at large as they do in captivity, they will undoubtedly become a source of danger, and stringent measures may be required to keep them under control. Still more dangerous would be the introduction of the Belgian hare into Porto Rico, where the question of its acclimatization has already excited interest.

THE ARMY CANTEEN — A HAPPY SURPRISE.

When our dailies recently announced that a bill had just passed the House, absolutely throwing the canteen out of the army as well as from the navy, I think I am right in saying it was a glad surprise to the temperance friends and almost everybody else the world over. It made me think of *Our Homes* for Nov. 15, where I said there were unseen and unknown agencies at work for temperance and righteousness. In the *Cleveland News and Herald* for Dec. 8, the whole thing is summed up so much to my notion of things that I give it here entire :

SHOULD GO OUT OF THE LIQUOR BUSINESS.

The adoption by the House of Mr. Littlefield's amendment to the army reorganization bill, absolutely prohibiting the sale of liquor upon the military camps, reservations, or transports of the United States Government, thus abolishing the army canteen, will satisfy a growing popular sentiment against the sanction of the liquor-traffic in any form by the government. Whether it makes for temperance among the troops can be demonstrated only by the operations of the law.

Everybody who believes that it is grossly wrong for the government to be responsible, directly or indirectly, for placing temptation in the way of its soldiers, will rejoice at the action of the House, and hope for similar action by the Senate; and even if the abolition of the canteen leads to an increase of drunkenness by forcing the soldiers to go outside of their camps, barracks, and reservations for a greater indulgence in the use of intoxicating liquors than would have been resorted to if all purchases were made through the canteen, it will not be possible to charge that the government is directly responsible.

Congress should go further than to prohibit the sale of liquor at army posts and camps, and upon government transports. The sale of liquor should be prohibited at the capitol building in Washington, in the cafes that are patronized by the members of the House and Senate. It is shameful that the sale of intoxicating liquor should be permitted in any building under government control, and which is supported by the money collected from all the people. It is time for the government to sever its connection with the liquor traffic entirely.

I was really amused to read that Grosvenor, of Ohio, said that, while he did not think it was the best thing to do, and he did not believe it would aid temperance in the army, yet because the people were making such a clamor about it he had voted to abolish the canteen. Thank God that public opinion has for once at least triumphed over the beer business and over all the money they have back of it.

SOMETHING STILL FURTHER IN REGARD TO
THE CANTEEN.

Charles Dick, who was given just one minute, improved that minute in giving before the House the following gem :

Mr. Chairman, the gentleman from Texas (Sladon) is wrong when he says that all army officers testify to the wisdom of the sale of liquors at the army canteens. On the contrary, we have the testimony of General Miles, General Shafter, General Wheeler, Surgeon General Sternberg, and many other officers who regard it as demoralizing to discipline, and as interfering seriously with the efficiency, the health, and the service of the soldier.

Contrary to the expression of the member from Texas, and taking decided issue with him, I insist that the mothers of this country, who give up their sons to the army of the United States, have the right to petition the American Congress; and that these appeals to protect their boys from undue temptation ought not to go unheeded. (Loud applause.)

The gentleman from New Jersey is wrong when he assumes that this amendment aims to destroy the army canteen. Its simple purpose is to keep the canteen from being converted into a saloon, and does not interfere with any of its social features.

The overwhelming public opinion which brought this question into the House at the close of last session has not changed, nor have the conditions it was intended to affect. The amendment may not accomplish all its friends expect of it, but why shall we legislate to encourage an evil? It is not a function of our government to regulate in the sale of intoxicating liquors.

ment to engage in the sale of intoxicating liquors. Mr. Chairman, consistent with the report of the Committee on Military Affairs at the close of last session, in which action I joined, I shall support with my vote the amendment of the gentleman from Maine, and urge its adoption by the House. (Applause.)

GLEANINGS IN BEE CULTURE

PRICE LIST OF FINE FLAT-HEAD WIRE NAILS.—P. 35.
Cement-coated, except first three.

L'gth.	Wire Gauge	No. in 1 lb.	Wt. of 5c pkg.	Price of		
				1 lb.	10 lbs.	100 lbs.
1/4 in.	No. 21	17,500	1 oz.	.85	\$3.00	\$27.50
5/8 "	" 20	10,000	2 oz.	.25	2.00	17.50
1/2 "	" 20	7,500	2 oz.	.20	1.70	15.00
5/8 "	" 19	4,200	2 oz.	.17	1.40	12.00
3/4 "	" 18	2,700	4 oz.	.13	1.00	9.00
7/8 "	" 18	2,350	4 oz.	.12	.90	8.00
1 "	" 18	2,000	4 oz.	.11	.85	7.50
1 1/4 "	" 17	1,200	4 oz.	.10	.80	7.00

PRICE LIST OF STANDARD (D) WIRE NAILS.

All cement-coated

Style.	Length.	Wire Gauge.	No. Nails in 1 lb.	Price	of
			1	10	Keg.
2d fine.	1 in.	No. 17	1440	8	60
3d "	1 1/8 "	" 16	1000	7	60
4d box.	1 1/2 "	" 15 1/2	550	7	60
5d "	1 3/4 "	" 14 1/2	366	7	60
6d "	2 "	" 13	250	7	55
7d "	2 1/4 "	" 13	236	7	55
8d "	2 1/2 "	" 12	157	7	55
9d "	2 3/4 "	" 12	130	7	55
10d "	3 "	" 11	107	6	52
4d casing,	1 1/2 "	" 15	550	7	60
6d "	2 "	" 13	250	7	55
8d "	2 1/2 "	" 12	157	7	55
3d common.	1 1/4 "	" 15	615	7	55
4d "	1 1/2 "	" 13	322	7	55
5d "	1 3/4 "	" 12 1/2	254	7	55
6d "	2 "	" 12	200	6	52
7d "	2 1/4 "	" 11 1/2	154	6	52
8-9d "	2 1/2 "	" 10 1/2	106	6	51
10d "	3 "	" 9 1/2	74	6	50
16d "	3 1/2 "	" 8	46	6	50
20d "	4 "	" 6	29	6	49

Carlin foundation-cutter with steel wheel is reduced to 25c each, and the Favorite Family scale, either size, to \$1.75.

Special Notices by A. I. Root.

THE BOOK ABOUT BOOKER T. WASHINGTON AND HIS
INDUSTRIAL SCHOOL AT TUSKOGEE, ALA.

We have made arrangements with the publishers so that we can furnish the above book postpaid to the readers of *GLEANINGS* for only 75 cts. The regular price is \$1.00, and it is a good large book full of pictures, even at that price. Every one who gets hold of the book will want to read it through, and it is almost impossible that any one should read it without being strengthened, and filled with enthusiasm for the great work of raising mankind from the depths of ignorance to the light of civilization; or perhaps I might say, in other words, in commencing to climb that rugged path from earth to heaven, or "stepping heavenward," as some one else has aptly put it. We expect to give a picture of the apiary and a portrait of Mrs. Washington in our next.

SPRAY-PUMPS FOR 1901.—THE ACME ATOMIZER.

We have just made a large purchase of the handsomest light tin spray-pumps that has ever appeared on the market. It just works beautifully. I visited the manufactory at Traverse City, Mich., and saw the process of manufacture, and talked with the proprietors about the defects of the spray-pumps we have sold heretofore; and we have something now made of IC charcoal tin that is not only light to handle, but it makes the nicest spray of any pump I ever got hold of, at any price, and yet the price is only 35 cts.; by mail, 20 cts. more. The manufacturer of these pumps says experience has demonstrated that it is cheaper to buy the inexpensive tin pumps, and throw them away when they get used up, and buy a new one, than it is to buy pumps made of galvanized iron, copper, brass, or any other material. We can sell you three of these cheap pumps for \$1.00. Take one and use it till the chemicals have corroded or incrusted the working parts, then take another, and so on.

We still have pumps made of galvanized iron and brass; but I myself am inclined to think that the cheap ones may be the cheapest in the end, just as I have mentioned. We can furnish the galvanized-iron cans, that we sold last year, for only 45 cts.; all brass, 65 ; 25 cts. more added to the last two if wanted by mail. By the way, it is a good plan to have them on

hand before you are ready to use them. For years past we have had stories of the loss of crops because we were sold out, or the pump was lost or damaged in the mails, or something of that sort. Lay in a stock now, and you will not have any such trouble when the busy season comes.

CONVENTION NOTICE.

The annual meeting of the New York State Association of Bee-keepers' Societies will be held in the Kirkwood, Geneva, N. Y. on Wed., Jan. 9, 1901, at 10 A. M., and continue through the afternoon and evening.

C. B. HOWARD, Sec'y.

W. F. MARKS, Pres. ROMULUS, N. Y.

THE MICHIGAN STATE BEE-KEEPERS' CONVENTION, DEC. 26, 27.

The following is a copy of a circular that has been mailed to the bee-keepers of Michigan:

Dear Fellow Bee-keeper:—The next annual meeting of the Michigan State Bee-keepers' Association will be in Grange Hall, Traverse City, Dec. 26th, 27th, commencing at 2 P. M. Will you please accept this as a personal invitation to be present? This will, without doubt, be the largest-attended meeting in the State for many years. We are to be honored with the presence of Mr. A. I. Root, of Medina, Ohio, whose name has become almost a household word, not only throughout the United States, but the world, wherever bees are kept. The program will be in the form of an open parliament, and those topics will be discussed that are nearest to bee-keepers' interests. A beautiful and novel badge has been adopted by the officers of the Association, and will be sold at cost, 25 cts., and the annual dues will be 25 cts. more. This will constitute expenses, except railroad and hotel bills. Reduced rates on all railroads, and the following hotels have made reduced rates to bee-keepers: Park Place Hotel, \$1.50; Hotel Whiting, \$1.00 to \$1.50; Hotel Plankborn, \$1.00; Hotel Shilson, \$1.00; Columbia Hotel, \$1.00 to \$1.25. Certainly all should be suited with the above rates to choose from.

GEO. E. HILTON, Pres.

Fremont, Mich., Dec. 1.

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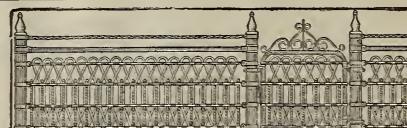
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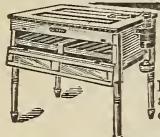
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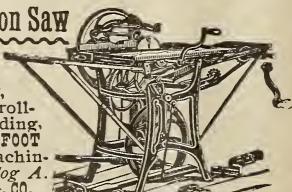


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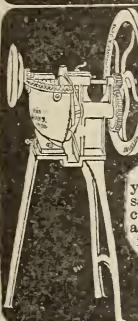
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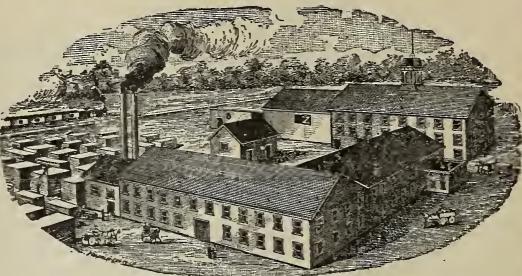
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Index to General Correspondence for 1900.

A B C of Bee Culture 223
 Abbott on Pure-food Bill 432
 Absent Treatment, Weltmer's 363
 Absent Treatment 701
 Achyranthus in Fall 931
 Acres to Support 100 Colonies 474, 602
 Adulteration of Honey—see Honey
 Adulteration, Hakes-Heddon Case 389
 Aguilera's Apiary, Cuba 47
 Aikin after Fowls 910
 Aikin's Law of Comb-building 139, 601
 Alfalfa, Roots and Plants, 3, 299-302, 313
 Alsike, Sowing in July 97
 Ants and Kerosene 571
 Ants around Hives 432
 Ants, Flesh-eating 528
 Ants, Red, To Kill 139
 Ants, To Abate 252, 432
 Apiary, Evergreens for Wind-breaks 267
 Apiary, Harrington's 82
 Apiary, Locating 919
 Apiary, Model 127
 Apiary, Our Own 344
 Apiary, Ours in Spring 344
 Apiary, Requeening 398
 Apiaries, Distance apart 907
 Apiarists, Wages of 735
 Apis Dorsata Crossed with Italians 880
 Apis Dorsata, Length of Tongues 132
 Aspinwall Comb-honey Super 341
 Bacilli Not Plants 798
 Barrels v. Square Cans 267, 914
 Bass, Black, Catching 698
 Basswood Seeds, To Germinate 53
 Basswood, Canker Worms on 514
 Basswoods, Age to Yield Honey 584
 Beans, A New 930
 Beans, Dwarf Prolific 629
 Bee and Bear Story 918, 919
 Bee Convection in California 252
 Bee Country, To Find a 921
 Bee Diseases 620
 Bee Literature 606
 Bee, When it Begins Field Work 6
 Bees a Specialty 397
 Bees and Fruit 79, 129, 472, 560
 Bees and Bulls 766, 804
 Bees and Horses, Variation in 688
 Bees and Peaches 845
 Bees and Spraying Trees 473
 Bees as Fertilizers 79, 129, 249, 472, 560
 Bees Attacking Escort Bees 923
 Bees Attracted by Colors 560
 Bees in City Limits 89
 Bees on Strawberries 470
 Bees on Shares 219
 Bees on the Highway 351
 Bees to Cuba 766, 804
 Bees Carrying Honey and Pollen at Once 618
 Bees Killed by Bordeaux Mixture 845
 Bees Poisoned by Spraying 488
 Bees Near Sugar-refineries 136
 Bees Shipped Long Distances 877
 Bees with Yellow Bands 735
 Bees that Won't Defend 222
 Bees v. Hives 760
 Bees, Age of for Field 213
 Bees, Age of for Flight 249
 Bees, Albino 443
 Bees, Average Flight of 810, 918
 Bees, Average Length of Flight 575, 576

Bees, Birds, and Grapes 845
 Bees, Bosman 425
 Bees, Carniolan 616
 Bees, Carrying into Cellar 6
 Bees, Chilled, How Long they Live 426
 Bees, Crazy Dance 251
 Bees, Cross, Good Workers 514
 Bees, Cross, To Get Rid of 468
 Bees, Desirable Traits in 436
 Bees, Eyes of 223
 Bees, Holy Land, Not Suitable for Comb Honey 249
 Bees, House and Field 213
 Bees, How Many Flowers they Visit 425
 Bees, How they Fly in at Entrance 384
 Bees, Improvement in 42
 Bees, Instinct of, Breeding out 392
 Bees, Instructions for Beginners 612
 Bees, Intelligence of 781
 Bees, Itaianizing 616
 Bees, Loss of in California 516
 Bees, Moving in Winter 136
 Bees, Non-swarming 655
 Bees, Non-swarming, To Get 569
 Bees, Rate of Flight 354, 810
 Bees, When to Handle 613
 Bees, Where Best Kept 397
 Bees, Why they Swarm 347
 Bee-cellars—see Cellars
 Bee-disease, New 513
 Bee-escapes, To Clean 619
 Bee-keeper Working 500 Colonies Alone 516
 Bee-keeper, How to be Clothed 613
 Bee-keeper, Extensive 250
 Bee-keepers' Convention, Ontario 129
 Bee-keepers' Institutes 924
 Bee-keeping and Side Issues 606
 Bee-keeping Axioms, Mrs. Barber's 488
 Bee-keeping for Farmers 967
 Bee-keeping for Women 258
 Bee-keeping in Colorado 90, 119
 Bee-keeping in the South 913
 Bee-keeping Trust Proposed 259, 260, 295
 Bee-keeping, Migratory 650
 Bee-moth and Coal Oil 923
 Bee-moth and Carbon Bisulphide 564
 Bee-moth, Sulphur tor 679
 Bee-moths 168
 Bee-paralysis 354, 443
 Bee-paralysis in California 252
 Bee-paralysis in Chile 963
 Bee-paralysis North and South 620
 Bee-paralysis, Experience with 604
 Bee-paralysis, To Cure 249
 Bee-proof Armor Suits 399
 Bee-veil, Kuehne's 809
 Beer in Manila 779
 Beer in New Possessions 97
 Beginners, How to Handle Bees 612
 Beginner's Wild Dream 524
 Benton Shipping-cage 130
 Beetle, Honey-eating 528
 Belgian Hares 430, 486, 514, 515, 519, 573, 606
 Belgian Hares a Menace 765
 Belgian Hares and Bee-keeping 211, 619
 Belgian Hares, History of 647, 686, 725, 765
 Belgian Hares, Drawbacks of 734, 977
 Belgian Hares, Abbott on 728
 Belgian Hares, Hutches for 655, 726
 Belgian Hares, Food of 725
 Bertrand, E. 953
 Bicycle Buzz-saw 46
 Bicycling Tour, To Prepare for 400
 Bingham's New Bee-cellar 174
 Birds and Flowers 451

Bingham's Expansive Hive 297
 Bisulphide of Carbon and its Uses 564
 Bisulphide of Carbon, To Apply 682
 Bisulphide of Carbon, Two Kinds 77, 564, 565
 Black Brood 298
 Black Brood in Michigan 351
 Black Brood, Difference between Spores and Germs 298
 Black Brood, Malignant Character of 298
 Black Brood, To Treat 343
 Black Brood, Symptoms of 92, 121, 127

Bleaching Honey—see Soiled Sections
 Book-making, Policy in 387
 Bordeaux Mixture 845
 Bottling and Selling Honey 801
 Bottom-boards 249
 Bran for Bees 365
 Breeding for Experiment 513
 Breeding for Improvement 306
 Breeding for Improved Strains 434
 Breeding for Yellow 843
 Breeding from Hybrid Queens 907
 Breeding from Select Stock 482
 Breeding Out Bad Qualities 256
 Breeding to Prevent Swarming 256
 Brood being Carried out 810
 Brood, Carrying out 846
 Brood, Mich in Hives 732
 Brood, Poisoned 488
 Brood, Spreading 216
 Brood, Starved 343
 Brood-chambers, Doolittle on 49
 Brood-chambers, and Shake-out Function 728
 Brood-chambers, Cause of Politen in Sections 841
 Brood-chambers, Doolittle on 134
 Brood-chambers, Large 338
 Brood-chambers, Shallow 297, 608, 684, 773, 841
 Brood-chambers, Shallow, Hiving on 872
 Brood-chambers, Shallow, Lthrop on 872
 Brood-chambers, Shallow, Norton on 873
 Brood-chambers, Shallow, Shearmen on 874
 Brood-chambers, Size of 49, 134, 297, 298, 382
 Brood-nest, Size of 488
 Brood-rearing, Bees or Queen Stopping 833
 Biosius Pure-food Bill 432
 Buckwheat Honey—see Honey
 Buckwheat, Japanese 220
 Burr - comb Ladders Money-makers 250
 Buzz-saw, How Made 46
 Cabbage-plants, Hardening 61
 California Cold Process for Fruit 629
 California Horehound-plant 211
 California, Honey Resources of 265
 California, Map of 44
 California, No Rain in 211
 California, Where Honey is Produced in 44
 Calvert in Europe 690, 730, 806
 Candied Comb Honey 139
 Candied Honey—see Honey, Candied

Canker Worm in Ohio 454
 Canker Worms on Basswood 514
 Cans v. Barrels—see Barrels
 Cans, Flat, Why 969
 Cans, Square, V. Barrels 267
 Cans, To Dry 53
 Carniolans v. Blacks 644
 Carrots per Square Rod 63, 277
 Cellar Bottoms 136, 137, 167

Cellar in Blasted Rock.....	924	Colorado for Home-seekers.....	220	Cultivation, Level.....	449
Cellar for Wintering Bees.....	773	Colorado, Bee keeping for Wo- men.....	258	Cushions on all Summer.....	834
Cellar Wintering.....	16	Colorado, Frames for.....	168	Cuttings, Rooted.....	279
Cellars.....	41	Colorado, Growing Fruit in.....	932	Dadant's Reception in Europe.....	907
Cellar, Bee, Temperature of.....	177	Colorado, Keeping Bees in.....	90, 119	Demons of Present Day.....	360
Cellar, Bingham's.....	205	Colorado, Migrating to.....	877	Dickel Theory.....	167
Cellar, Loss of Bees in.....	293	Colorado, Resources of.....	876	Diet, Vegetable, Favored.....	317
Cellar, To Take Bees out of.....	426	Comb Foundation and Gobby Honey.....	622, 657, 797	Disease, New Bee.....	476
Cellar, When to Put Bees in.....	908	Comb from Foundation, Light as Natural.....	622, 657, 797	Dividing v. Swarming.....	954
Cellar, Bee, Bingham's New.....	174	Comb Honey, Allowing Swarm- ing.....	206	Divisible Brood-chamber — see Brood-chambers, Shallow.	
Cellar, Bee, Enlarging.....	136	Comb Honey, Preventing Swarm ing for.....	223	Division-board Feeder — see Feed- ers.	
Cellars, Bee, Ventilating.....	187	Comb Honey, Stachelhausen on 840		Doolittle Book Criticised.....	571
Cellars, Sub-earth Ventilators for.....	42	Comb Honey, Importance of Crating.....	843	Doolittle Cells — see Cells.	
Cellars, Temperature in.....	41, 303	Comb Honey, Origin of.....	646	Doolittle Feeder — see Feeders.	
Cellar, Feeding Colonies in.....	138	Comb Honey, New Management 840		Doolittle on Size of Brood-cham- bers.....	49
Cellars, Thermometers in.....	304	Comb Honey, to Fumigate 653, 682		Dovetailed Hives, Miller's New 870	
Cell Cups <i>a la Swarthmore</i>	917	Comb 12 Years Old.....	908	Dowie Tabernacle, Zion.....	279
Cell Cups Accepted Without Royal Jelly.....	441	Comb Honey, Travel-stained, To Bleach.....	383	Dowie and Divine Healers.....	854
Cell Cups Pressed out.....	917	Comb Honey, Bleaching.....	530, 916,	Draper Barns.....	573
Cell Cups with Small Bottoms.....	513	921	Draper Jumbo Hives — see Hives.		
Cell Cups, Bottom Large or Small.....	558	Comb Honey, Bleaching <i>a la</i> Crombie.....	646	Drone Combs.....	438
Cell Cups, Doolittle, To Start	77, 581	Comb Honey, One Swarm for.....	250	Drone-comb, Queen-cells from.....	733
Cell Cups, Jelly in.....	470	Comb Honey, Candied, To Save 305,		Drone-cells v. Deep Cups.....	429
Cell Cups, Pridgen's Goblet.....	513	352	Drone-cells, To Convert to Queen- cells.....	429	
Cell Cups, Transferring Cocoons to.....	558	Comb Honey, To Sell on Wagon 908		Drones Being Killed off.....	489
Cell Cup, Pridgen.....	468	Comb Honey, Hives for.....	684	Drones from Choice Young Queens.....	381
Cells Reduced by Age.....	908	Combs Filled with Stores, Value of.....	354	Drones from Workers.....	222
Cells, Doolittle, in Brood-cham- ber.....	352	Combs from Foundation v Nat- ural.....	908	Drones in Early Spring.....	265
Cells, Doolittle Queen.....	221	Combs of Sealed Stores from Dead Colony.....	89	Drones Meeting Queen Twice.....	52
Cells, Drone, v. Deep Cups.....	429	Comb, Drone, when Built.....	644	Drones Serving another Purpose 530	
Cells, Stick for Forming.....	221	Comb, Greasy — see Sections, Soiled.		Drones, Abundance of.....	841, 868
Cells, Queen, from Drone Comb 733		Comb, Natural, v. Built on Foun- dation.....	797	Drones, Choice, To Secure.....	352
Cells, Shape and Size of.....	571	Comb, Soiled — see Sections, Soiled.		Drones, Killing off.....	400, 810, 923
Cells, Queen, Do Queens Lay in? 264		Comb, Travel-stained see Sec- tions, Soiled.		Drones, To Get out of Season.....	772
Cells, Worker, in Queen-cups.....	429	Combs, Empty, Value of.....	262	Dysentery.....	443
Cells, Royal Jelly in.....	429	Combs, Empty Removing Mold 265		Dysentery Caused by Burnt Sugar.....	488
Cells, Care of.....	350	Combs, Emptv. v. Foundation.....	262	Dysentery During Winter.....	85
Cell-building <i>a la Doolittle</i>	137	Combs, To Brush.....	613	Dysentery, Cause of.....	85
Chicago, Visit to.....	627	Combs Soiled from Dysentery 430		Dysentery, Combs Soiled by.....	430
Christians for Mayors.....	540	Combs, Straight.....	484	Dzierzon.....	167
Christmas Number, Our.....	924	Combs, Sealed Stores for Winter 84		Editor in Weilersville.....	928
Cider Without Apples.....	25	Combs, Rendering into Wax 89		Eggs, Mechanical Impregna- tion of.....	434
Cigarettes and Tobacco, Effects 409, 454		Comb-building, Aikin's Law 139, 644		Egg-farm, New.....	64
Cigarettes and Weather Bureau 409, 454		Comb-building, Aikin's Law of 601		Electropoise or Oxydonor.....	317
Cigarette Smokers.....	630	Comb-honey Production.....	127	England, Agriculture in.....	806
Clipped Queens in Swarms.....	394	Comb-honey Super, Aspinwall's 341		Entrance, How Bees Fly into.....	384
Clipped Queens — see Queens, Clipping.		Contraction, Disadvantages of.....	442	Entrance, Wide and Deep.....	384
Clipping, Fox on.....	969	Contraction, its Advantages.....	442	Entrances, Directions to Face.....	810
Closed end Frames — see Frames.		Controlling Swarms, Avoiding Increase.....	265	Entrance-closers.....	303
Closed-end Quinby Frames.....	531	Convention, S. S. in Akron.....	494	Entrance-closer, Pettit's.....	481
Cloth, Wet, for Closing Hive.....	304	Convention, Ontario.....	925	End-spacing Staples.....	529
Clover, Alsike, v. Red.....	618	Convention, Prohibition, in Chi- cago.....	581	Escape Porter, French Way.....	382
Clover, Crimson, in W. Va.	450	Conventions, do they Pay?.....	692	Eucalyptus Honey.....	253
Clover, Development of.....	844	Cook on Hares — see Belgian Hares.		Exchanges.....	60
Clover, Growing of, Prize Arti- cles.....	885-887	Co-operation of Bee-keepers	208,	Exchanges, Bee-keepers' 208 250 295	
Clover, Effect of Bees on.....	951	258, 260		Exchange, Honey, Favoring.....	485
Clover, Red and Alsike Mixed.....	618,	Covers, Sealed, for Wintering.....	89	Expansive Hive, Bingham's.....	297
833-837		Cowan on Honey and Sugar.....	953	Extracted Honey, Mrs. Barber on.....	258
Clover, Red, Sown in August.....	742	Cowan on Foul Brood	346	Extracting for Women.....	518
Clover, Red, Short-tubed.....	609	Crane's Feeders.....	802	Extracting, Automobile for.....	15
Clover, Short-tubed — see Red Clover.		Crowder and his 3000 Colonies.....	516	Extracting, Cleaning up after.....	566
Clover, Short, in Sight.....	968	Cuba after the War.....	915	Extracting-house, Hyde's Trav- eling	722
Clover Sown with Buckwheat.....	782	Cuba, Bee-keeping in.....	804	Extracting-house on Wheels.....	399
Clover Sown in August.....	782	Cuba, Bees and Bulls to.....	766, 804	Extractor, Peabody.....	57, 218
Clover, Sweet — see Sweet Clover.		Cuba, Drawbacks of	302	Farm in the Woods, Our.....	888
Clover, White, in Cultivated Fields.....	580	Cuba, Foul Brood in.....	261	Feces, How Voided.....	951
Clovers, White and Red.....	844	Cuba, Good Bee Locations in	260	Feeder, Bottom-board.....	516
Clustering Out, Shade to Pre- vent.....	222	Cuba, Mosquitoes and Climate.....	915	Feeder, Division-board.....	54, 78, 82, 87,
Cocoons, Transferring, by W. Atchley.....	558	Cuba, Not Going to.....	834	177	
Coggshall the Kicker.....	118	Cuba, Starting Apiary in.....	302	Feeding Fermented Honey.....	810
Colei in the Fall.....	931	Cuban Apiary, Visit to.....	47	Feeding for Comb Honey.....	516
Coleus in Greenhouse.....	63	Cuban Bee-keeping.....	201, 839	Feeding in Dead of Winter.....	924
Colonies, Difference in.....	688	Cuban Bee-keepers' Association 52		Feeding in Spring.....	222
Colonies, Weak, Strengthening 440		Cuban Honey Competitor of American	261	Feeding Bees, Syrup for.....	802
Colonies, 100, Acres to Support 474, 602		Cucumbers and Pickle-factories.....	783	Feeding Bees, Squirt guns	654
Colonizing, Equalizing in Spring	381			Feeding Sugar or Honey.....	809
Color v. Utility.....	614			Feeding to Stimulate Brood- rearing.....	51
Colorado Bee-keepers' Associa- tion	309			Feeding, Cold Process of Syrup.....	833,

Fertile Workers — see Laying Workers.
 Fixedness in Strains.....952
 Flax as a Honey-plant.....619
 Flight of Bees—see Bees.
 Florida, Ideal Locality in.....478
 Florida, More Frosts in.....173
 Flowers Attract Bees.....560
 Foul Brood.....616
 Foul Brood and Dry Season in California.....252
 Foul Brood, Cowan on.....346
 Foul Brood in Canada.....131
 Foul Brood in Cuba.....261
 Foul Brood not Killed by Freezing.....205
 Foul Brood, Curing, Saving Sound Brood.....575
 Foul Brood, Difficulties with.....346
 Foul-brood Law in Michigan.....91
 Foul-brood Law in Michigan, Why Defeated.....263
 Foul-brood Inspectors, New York.....839
 Foul-brood Legislation, to Get.....91
 Foul-brood Law, Effect in Canada 134
 Foundation in Sections.....303
 Foundation Starters—see Starters.
 Foundation with Hot Plate.....5
 Foundation v. Empty Combs.....262
 Foundation, Bleaching.....514
 Foundation, Bottom-starters.....680
 Foundation, Linseed Oil in.....117
 Foundation, New Way of Cutting 489
 Foundation, Weed, Test of.....51
 Foundation - fastener, Home-made.....488
 Foundation-fastener, Hot-plate. 842, 920
 Foundation-fastener, Miller's.....842
 Frames in Colorado.....168
 Frames without Wires.....351
 Frames, Clo'ed end.....344, 608
 Frames, Closed-end, Advantages of.....342
 Frames, Closed-end Quinby.....531
 Frames, Clo'ed-end, To Make.....344
 Frames, Closed-end, for Moving.....5
 Frames, Form for Nailing.....611
 Frames, Hoffman, in Pairs.....514
 Frames, Hoffman, Objected to.....478
 Frames, Hoffman, to Handle.....90
 Frames, Size of.....168
 Frames, Spacing of.....249
 Frames, Spacing-staples for.....529
 Frames, Width of Top-bars for.....798
 Francis Truth.....273
 Frogs in Florida.....922
 Fruit Benefited by Bees.....79
 Fuel for Smokers, Cotton Waste.....679
 Galvanized Iron Bad for Honey-vessels.....868
 Geraniums.....499
 Gillette's Experiments on Foundation.....622, 657, 797
 Glossometer for Tongues.....558
 Glossometers.....760
 Glossometers for Patrons.....602
 Glucose as a Bee Food.....139
 Glucosized Honey — see Honey, Adulterated.
 Gobby Comb Honey — see Gillette's Experiments.
 Grape Fruit.....923
 Grapes, to Keep.....391
 Grapevines, Training.....541
 Greenhouse Beds ou Ground.....699
 Greenhouses for Lettuce.....183
 Greenhouse, Large.....700
 Greenhouses, More About.....147
 Griggs Decision, Canteen.....183
 Ground, Marking with Chain.....975
 Hakes - Heddon Adulteration Matter.....389
 Healing, Divine.....410
 Heddon-Hakes Matter.....389
 High pressure Fruit-growing.....855
 Hive-question, Evolution of.....608
 Hive Stuff, Accuracy in.....611
 Hive Tools Painted Red.....382
 Hive, Danz., Sales of.....951
 Hive, Doolittle.....54
 Hive, Draper Jumbo.....86
 Hive, Heddon.....875, 876
 Hive, Ten-frame Dovetailed.....90
 Hive, Bingham.....875, 876
 Hive, Bingham's Expansive.....297
 Hive, Eight-frame Preferred.....876
 Hive, Jumbo, for Extracting.....399
 Hive, Large or Small.....213
 Hive, Old style Root Chaff.....439
 Hive, to Open.....613
 Hives in Groups or Pairs.....760
 Hives Not Essential in Bee-keeping.....819
 Hives, Are They Cheap Enough? 470
 Hives, Dampness in.....354
 Hives, Direction to Face.....920
 Hives, Distance Between.....920
 Hives, Jumbo.....573
 Hives, Large.....86, 338, 573
 Hives, Large v. Small.....468, 876
 Hives, Painting.....54
 Hives, Ragged.....907
 Hives, Removing Grass from.....430
 Hives, Shade for.....474
 Hives, To Keep Insects from.....341
 Hives, What to Select.....400
 Hive-covers in Colorado.....42
 Hoffman Frames—see Frames.
 Holtermann on Meat Diet.....774
 Honey Adulterators.....138
 Honey and Almond Cake.....84
 Honey and Chocolate Rolls.....774
 Honey and Increase, To Get the Most of.....218
 Honey Candied in Combs.....88, 139
 Honey Candied, and Why.....209
 Honey Candyng, Cause of.....340
 Honey Destructive to Bees.....443
 Honey Exchange, Favorable Experience.....485
 Honey for Market.....770
 Honey from Apple-blossoms.....513
 Honey from Cappings.....566
 Honey from Dandelion.....426, 470
 Honey from Fruit-bloom.....487
 Honey from Great Britain.....807
 Honey from Hickory.....217
 Honey from Oaks.....735
 Honey from Prune-trees.....398
 Honey from Scotland.....807
 Honey from Tea-plant.....222
 Honey from Titi.....353
 Honey from Upper Story.....440
 Honey Production, Mrs. Barber on.....258
 Honey Resources of California.....44
 Honey on Oatmeal.....880
 Honey Vinegar.....566, 763
 Honey, Amount of Comb v. Extracted.....398
 Honey, Annual Consumption of.....6
 Honey, Apple-blossom.....881
 Honey, Bitter, Source of.....620
 Honey, Boiling, to Disinfect.....570
 Honey, Boiling Spores in.....954
 Honey, Bottling — see Bottling Honey.
 Honey, Buckwheat.....116
 Honey, Candied.....88, 167, 337, 340, 601, 910
 Honey, Candied, Aikin on.....78, 955
 Honey, Candied, Discussed.....78
 Honey, Candied, for Display.....797
 Honey, Candied, v. Liquid.....388, 395, 563, 644, 770
 Honey, Candied, Future for.....91
 Honey, Chunk.....88
 Honey, Comb and Extracted, Same Apiary.....898
 Honey, Dark and White.....86
 Honey, Disinfecting by Boiling.....570
 Honey, "Distracte!," poem.....48
 Honey, Eucalyptus.....253
 Honey, Failure of.....877
 Honey, Fowls on Bottling.....959
 Honey, Grading.....878
 Honey, Large Yield, to Secure a.....782
 Honey, Marketing.....842
 Honey, Marketing Extracted.....304
 Honey, Marketing Liquid.....304
 Honey, Marketing, Powder on.....801
 Honey, Naturally and Artificially Ripened.....772
 Honey, Overheating in Water.....441
 Honey, Powder on Bottling.....957
 Honey, Secretion of.....529
 Honey, Selling.....435
 Honey, Selling Candied.....910
 Honey, Shiber on Bottling.....958
 Honey, to Candy.....118
 Honey, Why Not Candied.....487
 Honey-board.....440
 Honey-boards, Queen-excluding, for Comb Honey.....250
 Honey-dew from Hickory.....88
 Honey-dew, Sources of Good and Bad.....650
 Honey-extractor, History of.....213
 Honey-plants in Pots.....98
 Honey-receptacles, Galvanized-iron.....868
 Horticulture, Impostors in.....783
 Howard's Report on Black Brood.....91, 121
 Hutchinson Giving up Bees.....908
 Hybrids Reverting to Blacks.....843
 Hyde's Traveling Extracting-house.....722
 Increase in Honey, To Get Most 218
 Increase, Artificial.....175
 Increase, Keeping Down.....684, 872
 Introducing, Mechanical.....679
 Increase, When to Be Made.....381
 Incubator, Natural Hen.....275, 364
 Indigestion by Eating between Meals.....362
 India Famine.....271, 499, 586
 Intemperate Temperance.....624
 Introducing by Pasteboard Method.....717
 Introducing by Wire-cloth Cage.....604
 Introducing by Wire - cage Method.....88
 Introducing With or Without Escort.....680
 Introducing with Tobacco Smoke.....574
 Introducing, Difficulties of.....846
 Introducing, Experiments in.....912
 Introducing, New Method of.....344
 Introducing, Old Way.....953
 Introducing, Pasteboard, Hill on 952
 Introducing-cages.....476
 Italianizing Economically.....354
 Italianizing with Two Queens.....352
 Intemperance, Railroads against 885
 Jadoo Fiber.....227
 Jumbo Hives—see Hives.
 Kerosene, Spraying on Cattle.....788
 King Birds in Central California.....516
 Koons on Measuring Bee Tongues.....132
 Lamps, Electric, Portable.....363
 Land of Your own.....819
 Langstroth Monument.....721
 Larvae for Queen-rearing—see Queens, Larvae for.
 Laying Workers.....735
 Laying Workers, Plurality of 760, 846
 Laying Workers, Sure Sign of.....468
 Legislation, Pure-food.....295
 Lettuce, Grand Rapids, Growing.....319, 452, 458, 929
 Like Produces Like.....818
 Liverpool, Calvert in.....691
 Long-tongued Bees, Records of.....924
 Lvs for Cleaning Separators.....87
 Magnetic Healers.....151
 Marketing Extracted Honey.....304
 Marketing, Aikin on.....208
 Marketing, Organized.....208
 Marketing Land by Man Power.....975
 Measuring Bee Tongues — see Tongues, Measuring.
 Meat Diet and Use of Sugar.....774
 Mesmerism, Hypnotism, etc.....231
 Message to Garcia.....144
 Mice in Hives.....87
 Michigan Trip.....887
 Mignonette, Giant.....922
 Migratory Bee keeping.....650
 Miller on Queen-rearing Larvae.....521
 Millionaires and Cigarettes.....816
 Monument, Langstroth.....721
 Mosquito Hawk.....448
 Moving Bees—see Bees, Moving.
 Moving Bees Short Distances.....772, 918
 Muck, Swamp, for Strawberries.....782
 Mulch, Dust.....449
 Muskoka, Editor in.....660, 743
 Nectar Affected by Soil.....6
 Nectar Deposited in Daytime.....513

Nectar Secreted under Certain Conditions 479
 Nectar of Vegetable Origin 220
 Nectar under Influence of Moon-light 479
 Nectar, Why Not Sometimes Secreted 479
 New York Bee - disease — see Black Blood 853
 Non-medicine Cure 606
 Nuclei *a la Somerford* 222
 Nuclei, Buying 175
 Nuclei, Forming 354
 Nucleus on Exhibition 354
 Nucleus that Refused Queens 762
 Oil in California 252
 Outdoors, Living 664
 Overstocking in Colorado 90
 Overstocking in Florida 442
 Papaya or Melon Tree 277
 Paris Exposition, Exhibits at 833
 Parks of Chicago 627
 Peabody Extractor 57, 213
 Peaches in Traverse Region 782
 Peach-leaf Curl 976
 Peach-tree Borer 277
 Peddlers, Tree, Fraudulent 666
 Petit's Entrance-closer 481
 Physiology, Vegetable 479
 Pierce's Buzz-saw 46
 Plain Sections—see Sections
 Planting in July 542
 Plants, Growing for Sale 320
 Plant-lice, Pear-tree 220
 Plums in Poultry-yard 818
 Plum Stories, More 851
 Pollen and Honey 308
 Pollen, Amount per Colony 223
 Pollen, how Gathered 308
 Pollen in Cells 116
 Popcorn Crisps 137
 Porter, W. L. 309
 Potatoes, Marking in Traverse Region 817
 Potatoes, Scabby 409
 Potatoes, Sprouting 494
 Potatoes in Traverse Region 742
 Potatoes Mulched with Straw 666
 Potato, Russet, Scab-proof 29, 781
 Potatoes, to Keep for Table Use 666
 Pouder on Bottling Honey 801
 Pouder's Honey-wagon 802
 Poultices, Honey 249
 Pridgen System of Queen-rearing 719
 Priority Rights 870
 Propolis, Cleaning from Hives 248
 Propolis, Commercial Uses for 797, 921
 Propo is, Removing from Separators 87
 Queen Controlling Parentage 12
 Queen Cramps 643
 Queen Not Laying 620
 Queen, Does She Meet Drone Twice? 52
 Queen, To Find 601
 Queen, Virgin, Loss of 529
 Queens and Swarming Impulse 120
 Queens by Return Mail 718
 Queens by the Peck 917
 Queens Clipped *a la Jones* 604
 Queens Failing to Come up to Advertised Qualities 12
 Queens Flying from the Cells 574
 Queens from the South 400
 Queens in Shallow Brood chambers 728
 Queens Mating Twice 133
 Queens Mating, Prcf. Hodge on 133
 Queens, Age of Mating 425
 Queens, Breeding for Color 168
 Queens, Breeding for Improvement 306
 Queens, Clipping 223
 Queens, Clipped, Swarms with 569
 Queens, Clipping, to Prevent Swarming 223
 Queens, Fasting of 951
 Queens, Fertility of 120
 Queens, Giving New to Apiary 398
 Queens, To Send by Express 410
 Queens, To Find 396, 425, 486, 487, 515, 575, 728, 775
 Queens, Introducing Virgin 5
 Queens, \$300 and \$400 215
 Queens, Breeding Superior 12
 Queens, Mysterious Disappearance 353
 Queens, Introducing with Ether or Chloroform 798
 Queens, Larva for 168
 Queens, Laying, Plurality of 833
 Queens, Mysteries of Finding 425
 Queens, Purity of 772
 Queens, Value of 215
 Queens Virgin, to Introduce 293
 Queens, Why Balled 879
 Queens, Yellow 879
 Queenless, Deciding When a Colony is 222
 Queen-cells, Bees Refusing to Start 810
 Queen-cells, from Worker-cells 249
 Queen-cells v. Virgin Queens for Nuclei 349
 Queen-clipping 870, 924
 Queen-clipping, A B C Plan 838
 Queen-clipping, Jones Plan 643
 Queen-clipping, Miller's Plan 838
 Queen-excluders from Diseased Hives 399
 Queen-excluding Honey-boards — see Honey-boards
 Queen-hatcher, Swarthmore's 917
 Queen-rearing, Age of Larvae for 521, 576, 601
 Queen-rearing *a la Doolittle* 571
 Queen-rearing, Altitude for 846
 Queen-rearing Larvae, Miller on 321
 Queen-rearing Larvae Old or Young 429
 Queen-rearing, Age of Larvae for 655, 762
 Queen-rearing Apiary, Hyde's 722
 Queen-rearing, Improving Stock 870
 Queen rearing, Larvae too Old for 717
 Queen-rearing, New Kink 610
 Queen-rearing, Pridgen System 719, 772
 Rabbits in Bee-yard 775
 Rambler's Automobile Dream 14, 42
 Rape, Dwarf Essex 923
 Recipes, Selling 932
 Red and Other Clovers in July 98
 Red Clover and Bees, Improving 799
 Red Clover, Bees for 955
 Red Clover, Culley on 799
 Red Clover, Developing New Kinds 799
 Red Clover, Growing 855-857
 Red Clover, Short Tubes 681, 717, 774
 Red-clover Tubes and Tongues 871
 Reformed Spelling—see Spelling, Reformed
 Riche Foundation-fastener 10
 Roaches Among Bees 337
 Robbing, Contracting Entrances 810
 Robbing Cured by Doing Nothing 513
 Robbing, Curing Bad Case 481
 Roses, by Dr. Miller 229
 Royal Jelly—see Queen-rearing
 Rye, Improved Winter 631
 Saloon Power 6
 Scherff, Poem on Honey 48
 Sections Partly Filled for Baits 250
 Sections Soiled by Saliva 602
 Sections by Weight or Piece 293
 Section, Origin of 131
 Sections, Salability of 266
 Sections, Comparative Weights of 42
 Sections, Dampening 531, 557, 602, 643
 Sections, Fumigating 682
 Sections, Glued 87
 Sections, Greasy—see Sections, Soiled
 Sections, Ideal — see Sections, Tall
 Sections, Light Weight 8
 Sections, Plain 127, 310, 567
 Sections, Plain and Beeway Compared 88, 388
 Sections, Plain and Fence 566
 Sections, Plain Entrances 87
 Sections, Plain, Better Filled 388
 Sections, Plain, Culley on 567
 Sections, Plain, Sizes of 89
 Sections, Plain, When Better Filled 567
 Sections, Pollen in 441
 Sections, Soiled 310, 337, 338, 391, 557, 567, 576, 630
 Sections, Soiled, Definition of 206
 Sections, Soiled, Not Caused by Queen or Bees 170-173
 Sections, Soiled, Caused by Bees 171, 256
 Sections, Soiled, Queen the Cause 391, 610
 Sections, Soiled, Due to Queens 264, 310
 Sections, Soiled, Due to Weather 264
 Sections, Soiled, To Bleach 220, 383
 Sections, Soiled, Bleaching 530, 646
 Sections, Square or Tall 680
 Sections, Tall—13, 42, 77, 139, 221, 267, 310, 566, 575
 Sections, Tall, Better Sellers 222
 Sections, Tall, Arguments Against 51
 Sections, Tall, Favoured 51
 Sections, Thick v. Thin 575
 Sections, Travel-stained — see Sections, Soiled
 Sections, Unfinished 5, 6, 907
 Sections, Unfinished, Exposed to Robbers 718
 Sections, Weight of 139
 Sections, Why Not so Well Filled 567
 Section folder and Foundation-fa-tener 10
 Section-folder, Black's 221
 Section-holders, Angle Tins for 396
 Separators Indispensable 131
 Separators or Not 258
 Separators, Cleaning with Lye 87
 Separators, Perforating 314
 Separators, Use of 253
 Shade and Clustering Out 221
 Shade Detrimental for Honey 474
 Shade, Excessive, or Not 474
 Shade for Bees 489
 Shade for Hives—see Hives
 Shade Good for Certain Plants 408
 Shake-out Function—see Brood-chambers, Shallow
 Shallow Brood-chambers for Comb Honey 718
 Shallow Brood-chambers — see Brood-chambers, Shallow
 Shallow Brood-chambers, Lathrop on 684
 Shipping cases, 12 or 24 lb 907
 Simpson Honey-plant 570
 Sizes of Sections—see Sections, Plain and Tall
 Smoked Bees Redepositing Honey 922
 Smoker Fuel 220, 514
 Smoker Fuel, To Ignite 620
 Smoker Fuel of Cotton Waste 558
 Smoker Fuel of Wax Refuse 735
 Smoker Wood, To Dry 86
 Smoker with Continuous Stream 167
 Smoker, Hoope's 138
 Smokers and Fuel 612
 Smokers in Germany 205
 Smokers, Brass 222
 Smokers, Red-pepper Pod for 168
 Smoker-drippings 13
 Smoker-drippings, To Avoid 220
 Smoking Causing Bees to Gorge with Honey 810
 Somerford Method with Nuclei 606
 Soy Bean, Substitute for Clover 321
 Spelling, Reformed 50, 91, 117, 168, 209, 250, 650
 Spider plant 570
 Spinach, Loss by Poor Seed 405
 Spores and Germs—see Black Brood
 Spores Resisting Boiling 834, 954
 Spraying, Use of Carbolic Acid 841
 Spreading Brood — see Brood, Spreading
 Springs of Water 976
 Springs, Super — see Super Springs
 Sprites, Two Little—Poem 255
 Square Cans—see Cans

Starters, Bottom.....	294	Swarming, Natural.....	176, 205	Victor's Experiments in Feeding.....	516	
Stenographers and Typewriters	145	Swarming, Natural v. Artificial	484	Wages of Apiarists.....	735	
Sting, Bees Selecting Place for	470, 514, 558	Swarming, Questions Concerning.....	219	Water for Bees.....	5	
Stings, Death from.....	89, 266	Swarming, Why None.....	620	Water-witching.....	230, 318	
Stings, Horseradish for.....	118	Swarming, To Prevent by Caging Queen.....	89	Water-witching Weather Bureau on.....	543	
Stings, To Prevent.....	426, 612	Swarthmore's Queen-hatcher.....	917	Wax for Foundation, Brittle.....	169	
Stings, Preventing by Holding Breath.....	797	Sweet Clover.....	41	Wax from Old Combs.....	426	
Stings, Severe.....	53	Sweet Clover Blooming in June.....	557	Wax, Cooling Slowly.....	952	
Stings, Wet-sheet Pack for.....	53	Sweet Clover for Horses.....	583	Wax, Good, v. Poor.....	82	
Stings, Whisky for.....	524	Sweet Clover for Pollen and Honey.....	907	Wax, Honey Needed for.....	969	
Stock, Improvement of.....	306	Sweet Clover for Poor Land.....	855	Wax, Honey to Make.....	870	
Strawberries and Raspberries.....	582	Sweet Clover in Texas.....	264	Wax, Melting on the Stove.....	566	
Strawberries, Corn, Buckwheat, one Season.....	361	Sweet Clover, Yellow.....	489	Wax, Quotations on.....	84	
Strawberry, Earliest.....	498	Sweet-clover Hay for Horses.....	558	Wax, Refining with Sulphuric Acid.....	84	
Sugar for Good Candy.....	951	Symposium on Bottling.....	957-962	Wax, Rendering Old Combs into.....	89	
Sulphuric Acid—see Wax.		Syrup, Cold—see Feeding.		132	Wax, To Refine.....	84
Sulphur Fumes—see Comb Honey, Fumigating.		Syrup, Need of Mixing.....	952	Wax-producing Colony.....	845	
Sulphur-box for Bleaching Comb Honey.....	384	Telephane, Advantage in Country.....	748	Wax-worms—see Bee-moth.		
Super Comb honey, Aspinwall's	341	Temperance Legislation in Ohio.....	274, 455	Weed Foundation, Severe Test of.....	51	
Super-springs, Origin of.....	475	Temperature for Wintering—see Wintering.		Weltmier of Nevada.....	410	
Super-springs, Round.....	619	Terms, Disgusting.....	846	Weltmier, from his Victim.....	455	
Super-springs, the Merrell.....	654, 739	Thermometers in Cellar.....	304	Wheat and Rye, Turning for Potatoes.....	364	
Super-springs, Wright's.....	475	Things Worth Knowing.....	433	Wheelbarrow, Pneumatic.....	87	
Swain, that will Not Stay Hived	643	Tobacco, Uses of.....	315	White's Method to Bleach Comb Honey.....	883, 530	
Swarm, To Hold with Unsealed Larvae.....	442	Tobacco for Introducing.....	574	Windbreaks for Apiary.....	267	
Swarm, Why Bees.....	530	Tomatoes Mulched with Straw.....	498	Winter Passages, are they Necessary?.....	557	
Swarms Entering Wrong Hive.....	570	Tongue Measurements by Koons.....	132	Wintering <i>a la</i> Benton.....	131	
Swarms Going to the Woods.....	529	Tongue, Bee, Illustrated.....	965	Wintering Bees on Sugar Syrups.....	833	
Swarms Hived on Half Brood-chambers.....	438	Tongues, Long.....	77, 168, 609, 614, 922	Wintering in Cellar.....	877	
Swarms Hived on Shallow Brood-chambers.....	684	Tongues and Glossometers.....	558	Wintering in a Cave.....	214	
Swarms Incited b. Queen or Not	717	Tongues, Approximate Lengths.....	844	Wintering in Colorado.....	563	
Swarms Restrained by Unsealed Larvae.....	557	Tongues, Long, or Color.....	879	Wintering Indoors, when Practicable.....	868	
Swarms that would Not Stay Hived.....	620	Tongues, Long, Good Workers.....	881	Wintering Indoors, Consumption of Stores.....	214, 250	
Swarms with Clipped Queens.....	391, 569, 601	Tongues, Long, and Honey-gathering.....	844	Wintering on Closed-end Frames.....	342	
Swarms Without Queen.....	487	Tongues, Long, v. Short Clover.....	717	Wintering on Full Combs of Sealed Stores.....	249	
Swarms, Absconding.....	410	Tongues, Stretching.....	880	Wintering Outdoors.....	769	
Swarms, Destroying Queen-cells to Prevent.....	760	Tongues to be Measured.....	924	Wintering Without Bee-passage ways.....	528	
Swarms, Hiving Back.....	916	Tongues, Variation in.....	615	Wintering, Benton on.....	131	
Swarms, Hiving on Shallow Brood-chambers.....	684	Tools Painted Red.....	382	Wintering, Consumption of Stores Indoors and Out.....	214, 250	
Swarms, Hiving on Solid Combs	430	Top-bars, Width of.....	798	Wintering, Doolittle on.....	85	
Swarms, Late Profitable.....	526	Top-bars, Thick, Objections to.....	478	Wintering, Dysentery During.....	85	
Swarms, Reducing.....	685, 717	Transferring.....	358	Wintering, Effect of High Winds.....	118	
Swarms, Restricting to One.....	250	Transferring <i>a la</i> Heddon.....	88	Wintering, Sealed Covers for.....	89	
Swarms, To Carry on Bicycle.....	529	Travel-stained Sections — see Sections Soiled.		Wintering, Sealed Covers v. Absorbents.....	734	
Swarms, To Get from Difficult Posit'on.....	441	Traverse Region.....	741, 781	Wintering, Stores Consumed.....	214	
Swarming Impulse, Breeding Out.....	256	Trust v. Trust.....	208, 259, 260, 295, 337, 485, 602	Wintering, Variations of Temperature.....	90, 91	
Swarming Seasons, 3 in Year.....	528	Trust Not an Exchange.....	486	Wintering, When to Begin.....	908	
Swarming Instinct, To Control.....	393	Uncapping-fork.....	206	Wintering-cellar, All About.....	16	
Swarming, a Good Catch.....	522	Uncapping machine.....	252	Workers, Laying — see Laying Workers.		
Swarming, Artificial.....	175, 531	Unfinished Sections — see Sections, Unfinished.		Worms, Canker.....	514	
Swarming, Breeding out the Habit.....	908	Uniting to Keep Down Increase	216	Worm, Cotton or Boll.....	629	
Swarming, Cause of.....	347	Utility v. Color.....	614	Wright's Super Springs.....	475	
Swarming, To Prevent by Caging Queen.....	221, 834	Veil, Kuehne's.....	809	Zinc, Perforated, Inventor of.....	425	

Index to Editorial Items.

A B C Book, New	444	Alfalfa, Cultivation of	313	Bee Country, To Find	921
Acklin, Ethel	811	Alfalfa, Great Growth in West	312	Bees and Fruit	778
Adulteration Case, Hakes-Heddon	446, 490	Alfalfa, Yield per Acre	312	Bees and Horticulture	356
Adulteration in the East	269	Amalgamation of Union and Association	140	Bees and Peaches	736, 883
Adulteration Suppressed in Chicago	738	American Bee Journal	882	Bees on Cellar Bottom	179
Adulteration, Association Arrests	311	Apiary, Locating	919	Bees Attacking Bees of Introduced Queen	923
Aikin after Fowls	910	Apiaries, Distance Apart	907	Be's, Average Flight of	918
Aikin Making H me Market	58	Apis Dorsata on the Way	490	Bees, Birds, and Grapes	775
Alfalfa as a Honey-plant	93	Bacilli Cause of Disease	142	Bees, Cross, To Destroy	444
Alfalfa Bloom	313	Baldridge on Equalizing Colonies	358	Bee-brush, Pickard	849
Alfalfa Honey, Best Flavor	312	Barrels v. Cans at Chicago	812	Bee-keepers as Specialists	225
Alfalfa Honey, Thick	223	Barrels v. Tin Cans for Honey	914	Bee-keepers Organized	269
Alfalfa Not Popular in Chicago	358	Basswood, Canker Worms on	490	Bee-keepers' Institutes in New York	924
Alfalfa, Appearance of	313	Basswood, Hoppers on	738	Bee-keeping in the South	913
Alfalfa, Conditions for Growing	312	Bee and the Boy	577	Bee-keeping for Pleasure	402

Belgian Hares 446
 Birds v. Bees on Grapes 775
 Bicycling, Excessive 403
 Black Brood 91, 140
 Black Brood and Symptoms 92
 Black Brood Controlled in New York 848
 Black Brood in California 141
 Black Brood in Cuba 532
 Black Brood in New York 56, 444
 Black Brood, Contagious Character 268
 Black and Pickled Brood, Diagnosing 555
 Bottom-boards, Ragged, 907
 Breeding from Hybrid Queens 907
 Brosius Bill—see Pure-food Bill.
 Brood, Spreading, Condemned 358
 Brown, F. E. 971
 Buck, Carl F. 92
 California, 300 Carloads of Honey from 55
 California, Rains in 970
 Cameras for Half-tones 141, 270
 Candied Honey—see Honey, Canned.
 Candyng No Proof of Purity 355
 Canker Worms on Basswoods 490, 532
 Cans v. Barrels—see Barrels.
 Cell Cups a la Swarthmore 917
 Cell Cups and Drone Combs 656
 Cell Cups Pressed out 917
 Cell Cups, Doolittle, by Peck 401
 Cell Cups, Hill's 490
 Cell Cups, Large or Small Bottoms 445
 Cell-building Colonies 694
 Cells Reduced by Age 908
 Cells 263 from one Colony 695
 Cellar Blasted in Rock 924
 Cellar Bottom, Dead Bees on 179
 Cellar, When to Put Bees in 908
 Chicago Convention 357, 657, 737
 Chicago Convention Pictures 775
 Chicago Center of Adulteration 311
 Clover, Red—see Red Clover.
 Clover, Prize Articles on 881
 Coffee, Honey Cereal 226
 Coggshall and More Bees 178
 Coggshall as Lightning Operator 94
 Coggshall's Extracting-cart 94
 Colonies for Cell-building 694
 Colorado State Convention 20, 58, 93, 141
 Colorado Honey Exchange 269
 Colorado Sand Storms 577
 Colorado, 50 Carloads of Honey from 55
 Colorado, Migrating to with Bees 59
 Colorado, Overstocking in 59
 Colorado, Wintering in, 577
 Comb 12 Years Old, 908
 Comb from Foundation v. Natural, 622, 657
 Comb Honey, Bleaching, a Success, 916
 Comb Honey, Bleaching, 921
 Comb Honey, Grading—see Grading.
 Comb Honey, Soiled—see Sections, Soiled.
 Comb Honey, To Load on Wagon, 883, 908
 Comb Honey, Weight in Different Sections, 357
 Comb Honey, Weight of Wax in, 657
 Combs, Structure of, 622, 657
 Congress, Pure-food, 224
 Convention, Brass Band at, 847
 Convention, Chicago, 737
 Convention in Denver, 20
 Cover, 1900, Originator of, 92
 Cuba after the War, 915
 Cuba, Its Mosquitoes and Climate, 915
 Cuban Bee-keeping, Bad Way, 268
 Culley, Death of, 882
 Dadant in Europe, 907
 Denver Turned down, 971

Diagnosing Diseased Brood, 535
 Disease, New, in New York, 56
 Doolittle Cell Cups—see Cell Cups.
 Drones, Getting out of Season, 695
 Drones, Killing, 923
 Editor in Weilersville, 928
 Equalizing Colonies, 358
 Experiment Stations on Spraying, 533
 Extracted Honey at 33 cts., 58
 Extracting, Brushing Bees off, 621
 Extracting, Directions to Beginners, 621
 Extracting, Great Record in, 95
 Extracting, Uncapping During, 621
 Extracting-cart, Coggshall's, 94
 Extractors, History of, 56
 Extractors, Principles of, 58
 Feeder, Cheap, 776
 Feeding Beta - naphthol Syrups, 776, 848
 Feeding in Mid-winter, 924
 Feeding Medicated Syrup, 776
 Fences and Burr-combs in Colorado, 21
 Ferris Wax-extractor, 693
 Flight of Bees, Average, 918
 Foul Brood Increasing in U. S., 492
 Foul Brood, Gillette on, 142
 Foul-brood Law in Michigan, 91
 Foundation, Gillette's Experiments, 622, 657
 Foundation-fastener, Lewis, 140
 Foundation fastener, Hot - plate, 920
 France Photographed, 882
 Frogs in Florida, 822
 Gillette, C. P., 93
 Gillette on Foul Brood, 142
 Gillette on Foundation, 622, 657
 Gleanings for 1901, 925
 Globe Veil, 532
 Glove, Bee, New, 178
 Glucose Trust, 490
 Goback Sections, Miller's, 492
 Grading by Pictures, 224
 Grading, River on, 268
 Grape Fruit, 923
 Hakes Adulteration Case, 446, 490
 Headen, W. P., 142
 Hives, Directions to Face, 920
 Hives, Distance Between, 920
 Hives, Large, Non-swarmers, 355
 Hives, Raged, 907
 Hives, Arrangement in Apiary, 358
 Hive-covers and Hollow Batten Ridgepole, 92
 Honey as Viewed by Chemist, 142
 Honey Cereal Coffee, 226
 Honey Season of 1900, 491, 578
 Honey Taffy, 226
 Hives, Arrangement in Apiary, 358
 Hive-covers and Hollow Batten Ridgepole, 92
 Honey, Candied by Chemist, 142
 Honey, Candied v. Liquid, 910
 Honey, Alfalfa, Thick, 223
 Honey, Candied, Future of, 91
 Honey, Component Parts of, 142
 Honey, Marketing, 535
 Honey, 300 Carloads from one State, 55
 Honey, Selling Candied, 910
 Honey-extractors—see Extractors
 Horses and Bees, 401
 Howard's Report on Black Brood, 91
 Howe, Harry, Sick, 403
 Hutchinson to Give up Bees, 908
 Inspectors for New York, 445
 Introducing, Pasteboard Method, 693
 Introducing Queens, Experiments in, 912
 Kellogg's Imposition, 970
 King-birds v. Queen-rearing, 444
 Labels, Paste for, 226
 Langstroth Monument, 224, 656, 736
 Lewis, Dr., and his Treatment, 811
 Lightning Operator, Coggshall's, 95
 Lucerne—see Alfalfa.
 Mason, Dr., Interviewed, 656
 Meat Diet, 811
 Mignonette, Giant, 922
 Miller's Bees and Horses, 401
 Miller's Outyard, 493
 Monument, Langstroth, 224, 656, 736
 Moore's Long-tongued Bees, 848
 Moving Apiaries Short Distances, 445
 Moving Bees Short Distances, 918
 Moving Bees, Miller's Rack for, 493
 Moving-rack, Miller's, 493
 Name, Quibble on, 179
 New York Disease—see Black Brood.
 Non-swarming Hives, 255
 Ontario Convention, 925
 Overstocking in Colorado, 59
 Pan-American Exposition, 738
 Paste for Labels on Tin, 226
 Peabody Extractor, 56
 Peaches and Bees, 736
 Pickard Brush, 849
 Porter, W. L., Specialist, 225
 Porter, Life of, 225
 Propolis, Commercial Use for, 921
 Pure food Bill, 401
 Pure-food Bill, Brosius, 355
 Pure-food Commission, Illinois, 738
 Pure food Congress, 224
 Pyrethrum for Foul Brood, 401
 Pyrethrum to Kill Bees, 401
 Queen, To Find, 532
 Queen, \$20, 693
 Queen, \$200 Red-clover, 813
 Queens by the Peck, 917
 Queens, Caucasian, 817
 Queens, Clipping, 924
 Queen-hatcher, Swarthmore's, 917
 Queen-rearing, King-birds Enemy of, 444
 Queen-rearing Methods Compared, 694
 Rape, Dwarf Essex, 923
 Red Clover Cut at Peak of Yield, 532
 Red Clover, Amount of Honey, 536
 Red Clover, Need of Long Tongues, 536
 Red Clover, Short-tubed, 579
 Red Clover, Waste of its Honey, 536
 Red-clover Queen, \$200, 813
 Red-clover Tubes, Length, 813
 Report of U. S. B. K. U., 56
 Saloons Driven from Marengo, 356
 Score-card Committee at Chicago, 736
 Season of 1900 Poor, 847
 Secor for Congress, 736
 Secor's Report, 56
 Sections, 4 Kinds of Soiled, 355
 Sections, Plain, in Colorado, 21
 Sections, Soiled, To Bleach, 311, 656
 Sections, Unfinished, Use of, 492
 Sections, Unfinished, To Fill, 907
 Sections, Weights when Filled, 357
 Separators v. None, 93
 Shade for Bees, 402
 Shipping-cases, Single v. Double, 884
 Shipping-cases, 24 vs. 12 lb., 907
 Smoked Bees Redepositing Honey, 922
 Smoker Fuel, Best, 532
 Solar Extractors and Artificial Heat, 180
 Solar Extractor, Large's, 491
 Solar Wax-extractors in Colorado, 180
 South, Wintering in, 777
 Spelling, Reformed, 55, 91
 Spraying Law in New York, 178, 268
 Spraying Trees in Bloom, 403
 Spraying, Advice of Stations, 533, 534
 Spraying, Stahl's Bad Advice, 403
 Standard Sections, Weights of, 357
 Stereopticon at Chicago, 737
 Sugar Syrup a Kind of Honey, 812

Sugar Honey Discussed at Chicago, 812
 Sugar Syrup, To Prevent Granulating, 812
 Supplies, Colorado Bee-keepers on 20
 Swarms, Hiving Back, 916
 Swarming, Breeding out the Habit, 908
 Swarthmore's Queen-hatcher, 917
 Sweet Clover for Po'len and Honey, 907
 Sweet Clover in Colorado, 93
 Sweet Clover, Quality of Honey, 357
 Syrup, Medicated, for Disease, 776
 Texas Flood, 776
 Tongues to be Measured, 924
 Tongues of Miller's Bees, 881
 Tongues, Long, 818, 881, 922
 Tongues, How Measured, 579
 Tongues, Length of, 813

Tongues, Long, Records from, 924
 Tongues, Long, and Good Workers, 882
 Tongues, Measurements in Medina, 579
 Tongues, Measuring, 578
 Tongues, Measurements of, 693, 841
 Tongues, Tools to Measure, 847
 Travel-station Honey — see Sections, Soiled.
 Trust v. Trust, 269
 Uncapping — see Extracting.
 Unfinished Sections — see Sections, Unfinished.
 Union, N. A., Amalgamated, 140, 178
 Utter v. Utter, 778, 847, 883, 924
 Walker on Bleaching Honey, 311
 Wax, Amount in Combs, 622, 657
 Wax, Getting Light, 971
 Wax-extractor, Ferris, 693

Wax, Proportionate Weight in Honey, 657
 Wax-extractors — see Solar Extractors.
 Wintering in Colorado, 577
 Wintering in the South, 777
 Wintering Indoors, Requisites, 19
 Wintering Indoors, Sub-earth Ventilation, 19
 Wintering Indoors, Temperature, 19
 Wintering Indoors, Ventilation, 19
 Wintering Losses, 179
 Wintering, Experiments in Temperature, 91
 Wintering, Indoor and Out, When, 811
 Wintering, When to Put Bees in, 908
 Wintering-repositories, Ideal, 179
 Wintering - repositories Under Ground, 847

Index to Illustrations.

Acklin, Ethel, 811
 Aikin after Fowls, 911
 Aikin's Honey-pails, 58
 Aikin's Solar Extractor, 172
 Alfalfa Plants and Roots, 299-301
 Alfalfa-fields in Colorado, 767
 Angle Tins, 396
 Apiary in Alabama, 913
 Apiary in Chile, 964
 Apiary of J W Young, 128
 Apiary under Large Trees, 385
 Apiary, Barber's, 258
 Apiary, Harrington's, 83
 Apiary, McRae's, 913
 Apiary, Root Co's, 345
 Aspinwall's Separator, 841
 Aspinwall's Sotted Tin Sep'tor, 341
 Automobile for Extracting, 14, 15
 Automobile for Marketing, 14, 15
 Barber Bee-escape, 258
 Barber Method of Wheeling Combs, 258
 Barber's Extracting House, 258
 Barber's Extracting-implements, 519
 Barber, Mrs A J, 259
 Bee-escape, Barber's, 258
 Bee-gloves, 178
 Bee-keeping for Pleasure, 385
 Bee-veil, Good, 809
 Bees and Birds, 768 769
 Bees as Fertilizers, 81
 Belgian Hare, Prince Yukon, 687
 Belgian Hares, 648
 Belgian Hares, House for, 726 727
 Benton Queen cage, 130
 Benton's Win ering Plan, 131
 Bicycle Buzz-saw, 46
 Bingham and Heddon Hive, 875 876
 Bingham's Bee-cellars, 174
 Bingham's Expansive Hive 297
 Black and Pickled Blood, Magnified, 123
 Bleaching-house, Crombie's, 646 647
 Bleaching-house, White's 388 384
 Brood-chamber, Lthrop's, 684 685
 Brush Pickard's, 849
 Brushing with Cogshall Brush, 605
 Buck, C F, 92
 Bull-man and Bees, 768
 Buzz-saw, Pierce's, 46
 California Horehound, 210
 California, Map of 44
 Cart, Cogshall's Extracting, 94
 Catch, Good, by Old Man, 523
 Cellar, Bingham, 174
 Cell-building, Doolittle, 137
 Cell-cup, Queen-hatcher, 917
 Cell-cups by Wholesale, 402
 Cells from Drone and Worker Comb, 428
 Cells, Stick to Form 221
 Clipping Queens, Two Ways, 838
 Cogshall Brush, To Use, 605
 Cogshall, W L, 94
 Cogshall's Hand Cart, 94

Colorado, Lyon's Way to Winter, 563
 Comb Honey by N Y Grading, 225
 Comb Honey, Bleaching-house for, 383 384
 Comb Honey, House to Bleach, 646 647
 Crane, J E, 256
 Crane's Method of Feeding, 803
 Crombie's Bleaching-house, 646 647
 Cu. a. Hauling Bees in, 804
 Cuban Cyclone, 805
 Dadant Uncapping-can, 610
 Doolittle Cells Completed, 137
 Doolittle Cell-cups by Wholesale, 402
 Elisha's, Uncle, Shop, 306
 Entrance-closer, Pettit's, 481
 Extractor Anchored, 608
 Extracting house, Barber's, 258
 Extracting implements, Barber's, 519
 Feeder, Crane's, 802
 Foozel, Mr., Comic, 29
 Fork, Uncapping, 206
 Foul-brood Inspectors, N Y, 839
 Foundation, New Way to Cut, 489
 Foundation-fastener, Miller's, 140
 Foundation-fastener, Original, 842
 Foundation fastener, Willis, 488
 Fowls and Akin, 911
 Fowls Bottling Honey, 961 962
 Fowls, So Long! 956
 Frames, Form for Nailing, 612
 France Looking for Foul Brood, 873
 France, N E, at Dallas, 873
 Gillette, C P, 93
 Gloves, Bee, 178
 Grading, The New York, 225
 Grand Rapids Lettuce-house, 319
 Greenhouse, A I Roots, 149
 Greenhouse, Roots', 26 27
 Greenhouse, E M Miller's, 452
 Greenhouse, G'd Rapids Lettuce, 319
 Greenhouse T Slack's, 184 185
 Headon, W P, 142
 Heddon and Bingham Hive, 875 876
 Hive, Bingham's Expansive, 297
 Hive, Tenement, Rauchfuss, 565
 Hives, Bingham and Heddon, 875 876
 Hive record, Daily, 517
 Hogs, Development of, 307
 Honey-extractor Anchored, 608
 Honey-extractor, Peabody's, 57
 Honey Vinegar, 764
 Honey, Candied, in Pails, 58
 Honey, "Distractet," 48 49
 Honey, Fowls Selling, 911
 Howard, W R, 121
 Hyde's Extracting-house, 722
 Inspectors, New York, 839
 Introducing-cage, Wire-cloth, 131
 Langstroth Monument, 721
 Large's Solar Extractor, 477
 Lthrop's Brood chambers, 684 685
 Lord's Arch and Tank, 132
 Lyon's Method of Wintering, 563
 Map of California, 44

Marker, Chain, 975
 Market-wagon, Pouder's, 801
 McRae's Apiary, 913
 Microbes Seen in Microscope, 123
 Microscopic Views of Brood, 123
 Miller's Foundation-fastener, 842
 Miller's Greenhouse for Lettuce, 452
 Miller's Out-yard Bro't Home, 474
 Miller's Sectional Rack, 493
 Monument, Langstroth, 721
 Moving-rack, Miller's Sectional, 493
 Muth-Rasmussen's Super-spring, 619
 Oberlin, Scene in, 956
 Out yard, Miller's, Bro't Home, 474
 Pails, Aikin's, 58
 Peabody, J L, 58
 Peabody's Original Extractor, 57
 Pears and Apples, Cross-fertilization, 81
 Pettit Entrance-closer, 481
 Pickard's Brush, 849
 Pierce's Bicycle Buzz-saw, 46
 Pigeon Skulls, 616
 Pitman's Way to Cut Foundation, 489
 Plague Take that Bee, 561
 Plain and Bee-way Sections, 389
 Plant-box of Lath, 320
 Porter, W L, 226
 Porter, W L, and family, 213
 Pouder's Market-wagon, 801
 Pridgen, W H, 720
 Queen-cage, Benton's, 130
 Queen-clipping Illustrated, 838
 Queen-cells *a la* Jones, 428
 Queen-cells from Drone and Worker Comb, 428
 Queen-hatcher, Swarthmore's, 917
 Rabbitry House, 726 727
 Rambler as Mind-reader, 90
 Rambler's Automobile Scheme, 14 15
 Rauchfuss Tenement Hive, 565
 Ricke's Press, 10 11
 Root, A I, in Greenhouse, 149
 Root's Apiary, 345
 Silvia, Golden-leaved, 148
 Section Tins, Angle Tins for, 396
 Sections, Plain and Bee-way, 389
 Section-holder, Black's, 221
 Section-press, Ricke's, 10 11
 Separator, Aspinwall's, 341
 Shallow Brood-chambers — see Brood-chambers.
 Shop, Uncle Elisha's, 306
 Shop Talks — Against Nature, 348
 Shop Talks — Fassett's Point, 392
 Shop Talks — "Sections," 487
 Shop Talks — "Good Flight," 488
 Shop Talks — Stimulants Defined, 525
 Shop Talks — Henpecked Man, 571
 Shop Talks — "I intend to," 652
 Shop Talks — Queen-rearing House, 688

Slack's Greenhouse, 184 185
Smoker, Automatic, Hoope's, 188
Solar Extractor, Aikin's, 172
Solar Extractor, Large's, 477
Springs, Super, 475
Sprites, Two Little, 255
Stick for Forming Cells, 221
Stings and the Boy, 561
Super, Aspinwall, 341
Super-spring, Wright's, 475

Super-spring, Earliest, 619
Swarm and the Old Man, 523
Swarm-catcher, Voigt's, 486
Swarthmore's Queen-hatcher, 917
Tongue, Magnified, 965 966
Tongues of Bees, Variation, 615
Trouble at Sea, 769
Uncapping-fork, 206
Uncapping with Dadant Can, 610
Veil, Bee, 809

Victor's Daily Record, 517
Vinegar, Honey, To Make, 764
Wax-extractors—see Solar Extractors.
Wax-rendering, Arch and Tank, 182
White's Bleaching-house, 383 384
Whipple, W. W., 954
Wright's Super and Spring, 475
Young's Apiary, 128

Index to Contributors.

Adams W. W., 629
Ahrens S. R., 529
Aikin Mrs. R. C., 57
Aikin R. C., 208, 253, 910, 955
Alderman S. S., 775
Alford N. C., 18
Alley H., 530
Allen J. H., 441
Anderson G. P., 222
Anderson J. L., 266
Anderson F. G., 574, 922
Andrews T. P., 317
Arnold J. N., 955
Arthur J. W., 969
Aspinwall L. A., 341
Averill B. F., 487
Bailey G., 896
Baird Mrs. M., 629
Baldridge M. M., 213, 305, 489
Ball W., 576
Barber Mrs. A. J., 258, 433, 518, 566, 763
Barns Mrs. G. H., 227
Bass F. G., 443
Baxter A., 486
Beach S. A., 534
Beecher E. B., 441
Bennett A. P., 310
Bingham T. F., 174, 297
Black H., 221
Bogy W. S., 222
Bonney A. A., 265
Bonney C. P., 958
Boothroyd W. H., 317
Borgman A., 399
Bradford J., 88
Brockmier W. W., 618
Brown J. S., 139
Brown T. E., 260
Brown E. W., 921
Bullock L. O., 54
Burnham F. C., 88
Burner S. A., 399
Burrell H. D., 442, 735
Byers A. A., 219
Caldwell S. C., 450
Callbreath J. S., 396, 841
Campbell S. M., 361
Carman Mrs. J. S., 629
Carson S. W., 574
Cary W. W., 487
Carter G. W., 655
Case W. W., 575, 836, 844
Cater G. W., 665
Chambers J. E., 735
Christie W. H. M., 79
Christie A., 55
Claberdeboe H. C., 310
Clark J. I., 580
Clark F. H., 267
Clark R. O., 397
Clark A. W., 183
Clarke W. F., 57
Clayton C. H., 295
Clemens A., 531
Coggshall W. L., 259
Cook A. J., 274, 310, 318, 387, 484, 581, 599, 647, 649, 686, 725, 765
Cole A. L., 9
Cole R. A., 52
Coleman D. C., 454
Colvin J. R., 8, 5
Coney A. A., 219
Coppin A., 138
Cowen T. W., 346
Craig W., 454, 773
Crane J. E., 13, 79, 256, 802

Crane J. A., 881
Crego G. S., 665
Crombie L. J., 646, 921
Culley S. P., 567, 799
Cutts J. M., 53, 775
Danner W. P., 265
Davenport C., 564
David J. A., 455
Densmore L. W., 499, 543, 655
Detmier H., 921
Dewey N., 352
Dickinson E. L., 137
Doolittle G. M., 16, 49, 84, 184, 175, 216, 262, 308, 349, 394, 438, 484, 526, 569, 616, 658, 692, 732, 808, 842, 878, 919
Dozier Mrs. N. C., 365
Draper A. N., 573
Dwyer W. R. L., 531, 576
Eagerty W. H., 88
Eastwood W. O., 624
Etheridge J. T., 18, 353
Evans W. C., 221
Evans Mrs. J. C., 227
Eviland E., 488
Ewing E. E., 487
Felt E. P., 434
Fields Dr. M. 440
Finch F. A., 220
Fish A. B., 810
Fisher C. S., 455
Fletcher J. M., 452
Flower W. E., 774
Foosher J. D., 734
Foster E. B., 435
Fowl C., 304, 395, 563, 770, 881, 959
Fox E., 97, 218, 914, 969
Fuller M. C., 455
Garrahan N., 409
Gardner Mrs. C. D., 228
Gerbrich E. G., 220
Gerbracht J. H., 844
Gilda A. W., 295
Gifford H., 528
Giffilan J. H., 845
Gilette C. P., 220, 622
Gill M. A., 21, 876
Giltstrap WAH., 215, 485, 606
Gladwyn R. W., 486
Golden J. A., 391, 523, 682
Grainger E., 63, 660, 745
Green E. C., 579
Green J. A., 728
Green W. J., 364, 403, 534, 629
Gregson S. H., 486
Greiner J. C., 811
Greiner F., 129, 430, 472, 519, 560, 611
Gressman E., 405, 406
Hager A. M. V., 488
Hahman W., 880
Haight E. J., 8
Haines G. W., 137
Hall R., 440
Hall N. V., 86
Halstead E. W., 620
Hambaugh Hon. J. M., 10, 476
Haney J., 388
Harrison Mrs. L., 18, 173, 353
Harrington M. W., 82
Hart H. F., 845
Hasty E. E., 681
Hatch C. A., 267
Hawley W. L., 343

Hayes E. M., 574
Haynes J. A., 877
Heinssen F. J., 52, 87, 843
Higgins D. A., 916
Hilfeth E. A., 18
Hodge C. F., 133
Holling E., 322
Holtermann R. F., 612, 774, 921
Hooper F. T., 138
Hopkins H. D., 221
Hoss W. S., 359
Hovey A. E., 177
Howard W. R., 121, 298, 536
Howe H., 47, 53, 260, 302, 839
Howell E. D., 88, 399
Huff C. A., 735
Hugentobler R. C., 87
Humphries R. H., 540
Hund F. A., 64, 277
Hurt W. D., 809
Hvatt O. H., 363
Hyde O. P., 88, 722
Hyde H. H., 487
Hyde G. F., 654
Ingalls C. S., 455
Jackson J. W., 441, 442, 528
James H. L., 932
Jennings J., 619
Jenkins D. C., 398
Johnstone M., 846
Jones H. L., 429
Jones B. F., 218, 574
Jones B., 267
Keep B., 576
Kellogg C. E., 499
Keyes W. D., 769
King T. F., 587
Kinzie J. M., 264
Koops B. F., 132
Kriebel F. S., 89
Kuehne M. R., 530, 809
Lapsley R. A., 499
Lathrop H., 528, 618, 684, 872
Lawrence W. W., 88
Laws W. H., 775
Ledbetter T. G., 448
Lighty L. W., 228
Long C., 264
Loring S. C., 132
Luaces R. L., 54
Mallory S. H., 923
Mansfield F., 189
Marno L., 54, 265
Martin G. E., 266
Martin J. H., 97, 252, 339, 515, 522
Mason A., 222
Mason A. C., 391, 535, 665
Massie T. K., 342, 608
Mathews C. W., 584
McEvoy W., 134
McGowan T., 734
McIntyre J. F., 12
McKenzie J. L., 450
McKeon J., 317
McLallen H. L., 89
McLean Miss J. M., 352
McRae L. W., 913
Mendleson M. H., 52
Merrell J. A., 655, 785
Millard J. R., 214, 352
Miller A. C., 842, 846, 912
Miller S. E., 363, 455, 888
Miller E. M., 452
Miller C. C., 304, 356, 446, 520, 606, 609, 655
Moore J. P., 881

Morrison S. W., 221
Morts C. R., 136, 443
Mottaz A., 399
Murphy M. W., 845
Muth F. W., 563
Muth-Rasmussen W., 619
Nall E. F., 455
Needham J. C., 607
Newman T. G., 178
Nichols M. D., 655
Niver S. A., 87, 268
Norton A., 474, 604, 873
Olmstead C. A., 362
Osburn H. G., 915
Palmer S. A., 228
Penny N. O., 922
Pepé C. A., 412
Pettit S. T., 340, 384, 481, 772, 777
Pettit M., 303
Pfeffer A., 442
Pierce C. H., 46, 772
Pittman E. F., 489
Pomeroy D. F. D., 136
Pond C. N., 660
Porter W. L., 226
Porter M. C., 226
Pouder W. S., 801, 957
Pridgen W. H., 719, 773
Prink E. P., 489
Pryal W. A., 491
Quirin H. G., 455, 529
Rambler L., 44
Rankin W. M., 579
Ranson W. B., 54, 220, 344
Rehr F. L., 53
Replodge G. B., 922
Ritchey D. N., 880
Robinson w., 885
Rockenbaugh G., 261
Roderick J. H., 265
Roebeling C., 655
Ruff J. A., 18
Russel C., 610
Ryan W., 136
Safford E. Y., 86
Salisbury F. A., 439
Schaefle E. H., 82, 265, 432
Scherff L., 48
Secor E., 255, 300, 778
Selchon C. E., 18
Shearman J. O., 874
Shepard M. W., 442, 478, 487, 488, 914, 928
Shepherd A. D., 86
Shiber G., 958
Shrader G. W., 139
Siler J. T., 310
Skelton T. M., 88
Slack T., 185, 320, 454
Slingerland M. V., 629
Smith E., 53
Smith H., 263, 575
Smith F., 310
Smith H. L., 837
Smith T., 969
Somerford F. H., 766, 804
Somerford W. W., 569
Sølberg K. O., 773
Southwood J. W., 88
Stachelhausen L., 213, 840
Stewart C., 445
Stratton D. E., 53
St. John E. P., 529
Strevell J. W., 773
Stroud L. R., 655
Swarthmore, 917
Taylor D., 351
Terrill W. H., 89

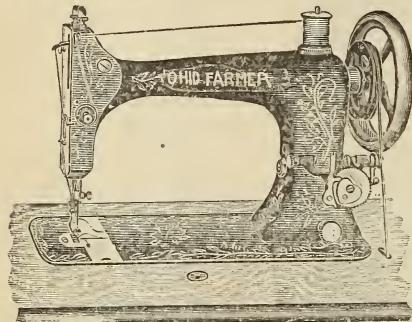
Thorne C E, 666
Thomas C C, 923
Tilt I S, 918
Toepferwein U, 366
Townsend O H, 411
Van Petten J T, 51, 919
Victor W O, 516
Voigt W, 486

Wager Rev J K, 455
Walker J E, 222
Walker B, 220
Wanzer G N, 51
W-tn C E, 222
Webster F M, 629, 738
Wescott I. O, 576
Whan F A, 455

Wheeler H W, 177
Whitney W M, 173, 264, 310,
Whiteside R F, 499
Whitten J C, 584
Whi'e A E, 388, 530
Wiggin F H, 366
Wilcutt A E, 922
Willey Mrs J, 227

Williams H E, 351
Willis R D, 488
Wilson H, 277
Wilson A J, 666
Wood J, 220
Wright H R, 774
Wright W D, 475
Wright A J, 479, 529, 566

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